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Plan of Work

for the

Third RCA Appraisal

"To provide for furthering the conservation, protection, and enhancement of the Nation's soil, water, and related resources for sustained use"

Introduction

The United States Department of Agriculture is conducting the Third Appraisal to fulfill the requirements of the Soil and Water Resources Conservation Act of 1977, Public Law 95-192 (RCA; see Appendix I). This plan of work (POW) describes how soil, water, and related environmental resources will be studied and analyzed to develop the Department's strategic plan for natural resources and the environment, the National Conservation Program (NCP) for 1998-2007. This POW sets forth the mission, objectives, goals, scope, and procedures that will direct the Third Appraisal. This document describes--(1) how resource conditions and trends will be studied; (2) how future demands, economic and conservation policies, and management practices could affect future resource conditions and use; (3) how the data will be collected, as well as assumptions for the analysis, methods of analysis, research needed for the proposed analysis, and model development; and (4) what staff work requirements, interagency coordination, public participation process, and management processes are needed to complete the Appraisal. User clientele of the Third RCA Appraisal will be a major concern in developing, preparing, assembling, and writing the report.

The Secretary of Agriculture has delegated lead management responsibility to the Assistant Secretary for Natural Resources and Environment, who in turn designated the Soil Conservation Service (SCS) as the lead agency for coordinating the Third RCA Appraisal in USDA. Appraisal development/preparation/analysis will involve all USDA agencies that administer programs for education, financial and technical assistance, and research to support conservation. These agencies include Forest Service (FS), Agricultural Stabilization and Conservation Service (ASCS), Cooperative State Research Service (CSRS), Agricultural Research Service (ARS), Economic Research Service (ERS), Farmers Home Administration (FmHA), and Cooperative Extension Service (CES). Other Federal agencies with responsibilities in natural resource and environment management will be involved in data collection, research, analysis, and report reviews. These principal agencies include Environmental Protection Agency (EPA), U.S. Geological Survey (USGS), Fish and Wildlife Service (F&WLS), U.S. Army Corps of Engineers (COE), Bureau of Land Management (BLM), Bureau of Reclamation (BOR), Department of Energy, Federal Emergency Management Administration, etc. Other interested parties include conservation interest groups and other natural resource organizations, agri-industry, and individuals.

The Third RCA Appraisal will concentrate on analyzing available opportunities for policy makers and program managers to protect, conserve, and improve natural resources and the environment. It will be the analytical structure from which to develop the NCP strategic plan for natural resources and the environment. The following sections describe the mission, objectives, goals, and scope of the Third Appraisal. Next are executive summaries of the resource topic areas and policy and program issues the Third Appraisal will address. Lastly, how each task will be accomplished, time schedules, and staff requirements are presented.

Appendix III contains the individual plans of work for each resource topic area. A standardized format of 5 tasks is used in each resource topic area plan of work. Task 1 is an introduction explaining the how, what, why, and where--i.e., the nature and extent of the work. Task 2 is an assessment of "Current Status and Trends" and Task 3, "Technical Methods and Data Collection," is concerned with new and developing technology, model development and data needs. Task 4 is an evaluation of "Alternative Solutions" to conserve, protect and enhance natural resources. Task 5, "Future Policy Analysis," undertakes the simultaneous consideration of the effects of various conservation, commodity, trade and environmental policies on the protection, conservation, and enhancement of natural resources.

This draft of the Plan of Work for the Third RCA Appraisal provides the setting for USDA conservation agencies, other government agencies, and the public to make comments. We ask each of you to review the Plan of Work and discuss your technical comments with the appropriate resource topic leader as shown in Appendix II. Also, you are welcome to contact Jim Maetzold, Program Analyst, Strategic Planning and Policy Analysis (SPA), Soil Conservation Service (SCS) on 202-720-0132.

Background

Several changes occurred in soil and water resource use between the First (1980) and Second (1987) Appraisals. Conditions have changed markedly since the Resources Conservation Act was first enacted. In 1977, prices, exports, and acreage of agricultural commodities were increasing. Famine was stalking many countries, and reports of world resource degradation were increasing. Adding to the concern was a perception that technology, which had supported continuous increases in agricultural productivity for decades, was not likely to provide similar increases in the future.

In the early 1980's, the trends in demand sharply reversed. World demand fell in response to a worldwide recession and serious debt problems in many importing countries. At the same time, world agricultural production was rising. In this country, recurring surpluses were the result of the increased productive capacity that had been developed in response to a decade of rising demand and prices. New technologies seemed likely to perpetuate the "problem" of abundance for the next decades. World resource conditions have not improved, and global change is becoming an increasing concern. Soil degradation in

the United States has been checked by reducing erosion, but water quality and quantity conditions have deteriorated in many areas.

The two appraisals have spurred changes in conservation policy which have been emphasized by USDA in the development and implementation of the National Program for Soil and Water Conservation (NCP). The First Appraisal laid the foundation for formulating the first NCP in 1982. The Second Appraisal's findings guided the changes in direction of the NCP update for 1988 to 1997. The NCP for 1982 emphasized redirecting USDA efforts to focus on the priority goals of reducing soil erosion, increasing water management efficiency, and reducing flooding; fostering a stronger partnership between the federal government and local and state governments to solve conservation problems; and improving the effectiveness of USDA program management.

The 1988 NCP update gave a top priority to reduction of soil erosion on agricultural land, with emphasis on implementation of the conservation provisions of the Food Security Act of 1985 and on improving and protecting water quality and quantity. The 1988 NCP update maintains the impetus to strengthen the conservation partnership and increase consistency and effectiveness of USDA conservation activities.

The appraisals have guided and spurred natural resource research by identifying gaps in information needed for policy formulation, program development, and technical assistance analysis and modeling techniques. The 1980 Appraisal led to the USDA-wide coordinated research effort to develop EPIC, a biological, physiological, and economic process model to assess the effects of erosion on soil productivity. The analytical requirements of the Second Appraisal stimulated the development of several process models to assess the relationship between water quality, sediment, soil resources, and the environment, as shown later in this document.

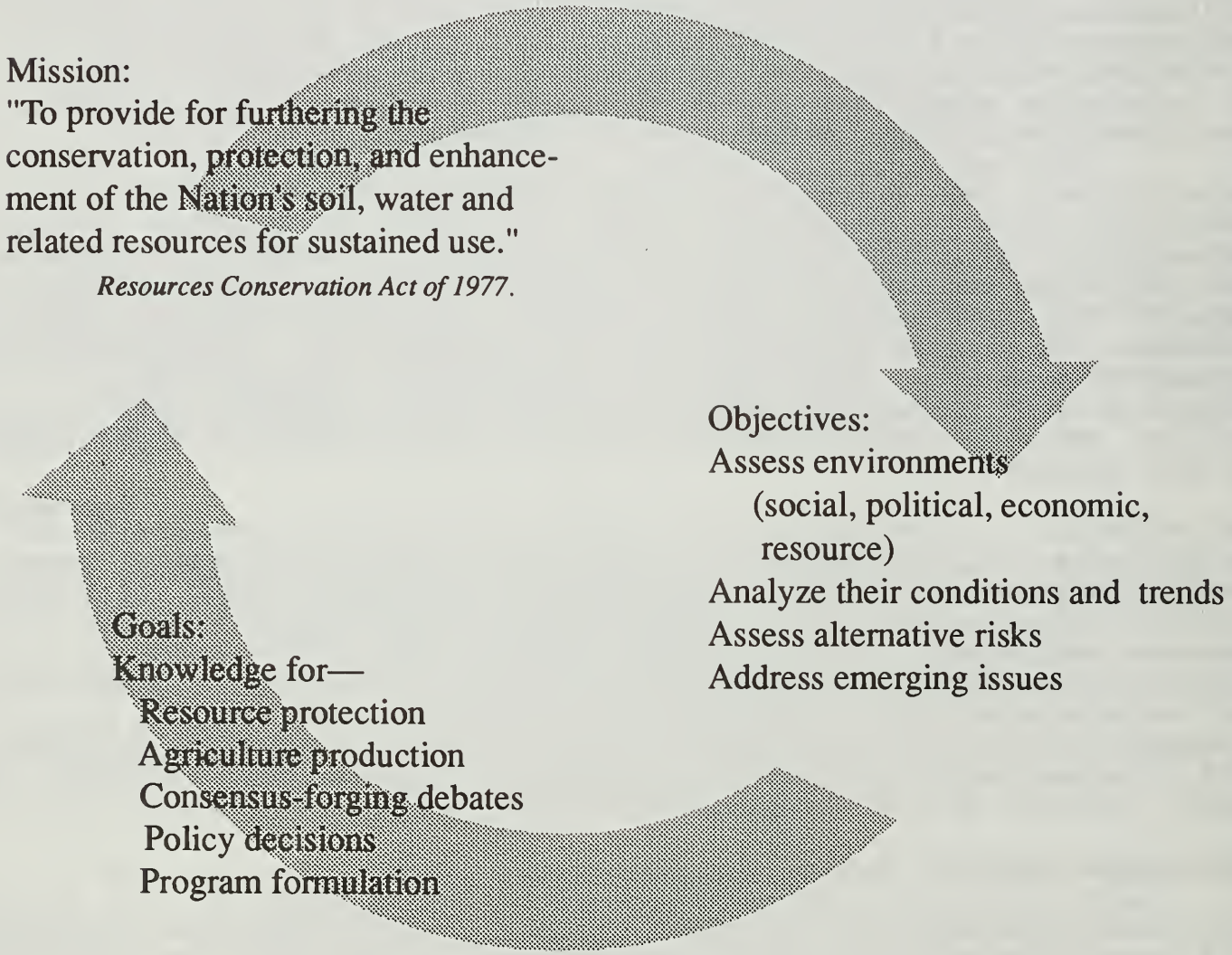
The emphasis on strengthening the Federal/state/local partnership set forth in the 1982 NCP and again in the 1988 update has assisted every level of government in identifying resource issues, setting priorities, defining conservation goals, and implementing programs to improve resource conditions. State governments and local conservation districts have improved capabilities to define conservation goals with the assistance of the two appraisals and national conservation programs. This conservation partnership strategy has extended beyond USDA to other Federal agencies, private individuals, agri-industry, and public interest groups to address resource issues.

Framework for Third RCA Appraisal

The mission, objectives, and goals of the Third RCA Appraisal are shown in Figure 1 and are discussed in more detail in the following sections.

Figure 1

FRAMEWORK FOR THE THIRD RCA APPRAISAL STRATEGIC PLAN



Mission

The mission of these continuing appraisals is to aid in developing conservation policy, programs, and implementation, thus fulfilling the intent of the RCA of 1977: "To provide for furthering the conservation, protection, and enhancement of the Nation's soil, water, and related resources for sustained use." This appraisal will provide guidance for managing our resources today and tomorrow, conditioned by the current and changing social, economic, institutional and political structure of the United States and also by worldwide economic, political, and environmental conditions.

Objectives

The Third RCA Appraisal's aim is to achieve a better understanding of the environmental relationships of alternative choices in agricultural production. The Appraisal will emphasize the bond between economic and environmental progress and the effect of technologies for the better management of agricultural production practices. It will:

1--assess the condition and trends of soil, water, and related resources on nonfederally owned lands, using the Natural Resource Inventories (NRI) and other data sources;

2--project the short- and long-term environmental quality and sustained agricultural conditions which would be attained under alternative agricultural production, conservation, commodity, environmental, and trade policies and their effect on the environment, on individual producers, and on the economic, social, and institutional structure of rural America;

3--evaluate federal/state/local conservation partnerships for furthering the protection, conservation, and enhancement of the environment for sustained agricultural production;

4--assess the use, management, and conservation of cropland, forestland, rangeland, pastureland, and wetlands in meeting the needed role of total resource management and multiple conservation benefits; and

5--address emerging resource issues and tradeoffs being considered by policy makers and natural resource conservation and environmental program managers.

Goals

The Third RCA Appraisal's goal is to capture the interaction and tradeoffs of the conservation, commodity, and trade aspects of the agricultural production and environmental resource systems. It is easy to look at one relationship and ignore a large part of the rest, or study the detail and become buried in a mass of parts. The overall goal is to move toward an analysis of the real world that simultaneously considers to the largest degree possible the interconnected systems--in particular, how agricultural production

systems are interlinked with the environmental system--and to understand the tradeoff interdependencies of conservation, commodity, and trade policies.

"The more people there are in the world, the more demand there will be for food, fiber, wood, water, fuel and every other product of the land." (Neil Sampson) Decisions will need to be made on how best to meet these demands through agricultural production technology while minimizing the impact on the environment. These decisions will involve the social, economic, and political structure of the nation. These decisions must be based upon accurate and adequate information to reach an informed consensus of opinion. The goals of the Third RCA Appraisal will provide knowledge for:

1. **Resource Protection** by developing data bases, performing resource, economic and environmental analyses, and making evaluations for use in policy decisions and program formulation;

2. **Agricultural Production** so USDA can help farmers and ranchers better respond to society's demands of environmental enhancement and food and fiber production;

3. **Consensus-forging Debates** to develop effective public policies and programs for enhancing environmental quality when meeting agricultural production goals and protecting the resource base for future generations;

4. **Policy Decisionmakers** to assess the tradeoffs between conservation programs, agricultural production programs and trade policies at the Federal, state and local levels; and

5. **Program Formulation** at the Federal, state and local levels by providing a solid foundation of natural resource data and analysis and alternatives to act on resource issues of the 1990's and 2000's.

Issues and Natural Resource Opportunities

The Third RCA Appraisal will present information to assist policy decision makers and program managers to form better policies and programs to address soil, water, and other environmental concerns for the next two decades. Several meetings were held with Federal agency and futurist environmental policy analysts to identify major environmental concerns of the future. As a result of this guidance, this analysis will address three major issues:

ISSUE 1--What more can agricultural producers, nonagricultural land users, and policy makers do to conserve, protect and enhance the environment?

ISSUE 2--How could forces outside agriculture affect future resource use and conditions?

ISSUE 3--What effects will future agricultural resource, production, conservation, environmental and world policies have upon the rural social structure, economy and conservation partnerships?

These issues will be analyzed by determining how existing and future resource management opportunities can protect, enhance, or conserve the environment through alternative agriculture production practices and changes in conservation, commodity, environment, and trade policies. The analysis will cover 28 different resource topic areas.

Resource Topic Areas by Issue

ISSUE I. What More Can Agricultural Producers, Other Land Users, and Policy Makers Do To Conserve, Protect, and Enhance the Environment?

1. What opportunities exist in pesticide management?
2. What opportunities exist in inorganic fertilizer management?
3. What opportunities exist in organic fertilizer management?
4. What opportunities exist in salinity management?
5. What opportunities exist in sediment management?
6. What opportunities exist in erosion management?
7. What opportunities exist in wildlife/fisheries habitat management?
8. What opportunities exist in wetlands/riparian area management?
9. What opportunities exist in water quantity management?
10. What opportunities exist in grazing lands management?
11. What opportunities exist in woodlands management?
12. What opportunities exist in agricultural management to improve water quality? (Use information from items 1 to 11)
13. What opportunities exist in agricultural management to achieve a sustainable system? (Use information from items 1 to 11).
14. What opportunities exist for agriculture to improve air quality conditions?

ISSUE II. How Could Forces Outside Agriculture Affect Future Resources Use and Conditions?

1. What are the effects of global change on conservation?
2. What are the potential impacts of producing biomass as feedstock for energy and industrial products on natural resource conservation?
3. What are the effects of nonagricultural demands for land?
4. What are the effects of nonagricultural demands for water?

ISSUE III. What Effect Will Future Agricultural Production Programs, Conservation, Environmental and World Policies Have upon the Rural Social Structure, Economy, and Conservation Partnerships?

1. What are the effects of conservation policies on the rural sector?
2. What are the rural sociological factors in and effects of conservation adoption?
3. What are the effects of conservation policies on cultural resources?
4. What is the role of the public in supporting conservation?
5. What is the role of total resource management in conservation?
6. What is the role of recreation management in conservation?
7. What is the role of upstream flood management in conservation?
8. What is the role of federal, state, and local partnerships in conservation?
9. What is the role of limited resource and minority farmers in conservation?
10. What is the effect of the changing work force composition on implementing conservation?

Executive Summary of Resource Topic Areas POW

A brief statement about each of the 28 resource topic areas is presented next. It shows what is being proposed for study, evaluation and analysis for the 1995 farm bill and the Third RCA Appraisal. These results and findings will provide the base from which to develop the National Conservation Program for 1998 to 2007. The tasks, people and agencies involved in completing these plans of work are shown in Appendix III.

ISSUE I: WHAT MORE CAN AGRICULTURAL PRODUCERS, OTHER LAND USERS, AND POLICY MAKERS DO TO CONSERVE, PROTECT, AND ENHANCE THE ENVIRONMENT?

1. What Opportunities Exist in *Pesticide* Management?

The relationship between the environment and pesticide use and management in the agricultural sector will be assessed. The challenge is to produce a safe and abundant food supply while preserving the environment and a sound, financially viable agricultural sector. A policy paper on "What is the pesticide issue?" and "What is needed to protect the environment?" will be the first agenda item. Pesticide use

in agriculture and in urban areas, highways and industry will be identified by region and state respectively. For agriculture, per acre use by commodity crops, market order crops, fruits, vegetable and tree crops will be determined by state and region by tillage practice, soil texture and rotation practices. An interagency multidisciplinary team will be assembled to formulate model and analytical methods for the RCA. A pesticide risk assessment process for agricultural chemical use will be designed. A knowledge-based artificial intelligence expert system will be designed to evaluate the relationship between biological diversity and alternative Integrated Crop Management Systems (ICMS) that include pest controls. The impact of pesticide use on the environment will be identified and methods to reduce effects on the environment will be studied with the use of models. An integrated conservation, commodity and environmental analysis will be performed to assess policy and regulatory impacts on producer returns, consumer prices, and global trade. The results of the analysis will be used in assessing the relationship between agriculture and water quality.

2. What Opportunities Exist In *Inorganic Fertilizer* Management?

The interrelationships of inorganic nutrient management for agricultural production and environmental effects will be assessed when achieving efficient use of nutrients while maintaining production. Use of nutrients and their trends, by agriculture, urban areas, roads, industry and recreation, will be shown by region. Nutrient effects on the environment will be identified by region. Production management techniques which reduce or minimize problems will be examined and presented. Plans acceptable to the environment, producer and economy will be presented. An interagency and multidisciplinary team will review and select models for the RCA analysis. This analysis will address fate and transport of applied nutrients for agriculture production and the effect of conservation and environmental practices on the environment and producer returns. A knowledge-based artificial intelligence expert system to assess nutrient application will be designed for field use. The effects of nutrient reduction and of climate change on yield variability, total production capacity, regional production patterns and producer returns will be estimated. The impact of inorganic nutrients on soil productivity, soil tilth, erosion, soil moisture relationships and sustained production will be evaluated.

3. What Opportunities Exist In *Organic Fertilizer* Management?

The interrelationships of managing organic nutrients, both for and originating from agricultural production, and the environment will be assessed when achieving efficient use of nutrients while maintaining production. The relationship between nutrients and environmental quality will be assessed. Point and nonpoint sources of organic nutrients will be estimated for various regions of the nation. Agricultural production of organic nutrients by crops and animals will be estimated by region. Current and new organic nutrient management techniques will be assessed. A knowledge-based artificial intelligence expert system will be developed to analyze fate and transport of organic nutrients. It will be used to assess alternative nutrient

policies, programs and management technologies and determine the economic effect on producer returns and consumer prices. Nutrient effects on the environment will be identified for current production patterns and practices and for the alternative policies. A methodology to prepare state nutrient management plans will be developed and disseminated to USDA, EPA, USGS and other Federal agencies.

4. **What Opportunities Exist In *Salinity* Management?**

Soil and water salinity, saline seeps and salt water intrusion problems, their relationship to agriculture, restoration and alleviation alternatives, agricultural and environmental impacts and the extent of the conditions will be presented and evaluated. Agricultural conservation and production practices contributing to salinity conditions, as well as commodity and trade programs which have contributed to these conditions, will be identified. Alternatives to reclaim and restore salt-affected agricultural lands by reducing salinity conditions will be evaluated. The interrelationship of irrigation and salinity will be presented. Salinity effect on yield and producer profits will be assessed with models. The effect of nonagricultural demand for water on agricultural water use and salinity will be assessed. An analysis of current and proposed commodity, conservation and environmental policies and programs will be conducted to assess the effects on salinity and producer returns.

5. What Opportunities Exist in *Sediment* Management?

How natural physical, biological and agricultural and nonagricultural management factors generate sediment, its effects on the environment, and alternative solutions will be explained. The Interagency Sedimentation Committee will describe how sedimentary buildup affects the environment and how conservation planning and application can control the sediment effects on water quality. Sediment yield by erosion source and erosion will be reported and critical areas identified. The ways in which sediment degrades water quality will be described and the geographic properties which contribute to sediment problems will be identified. The benefits of watersheds to rural and urban areas will be reported. An interdisciplinary team will identify information and measurement needs to better determine sedimentation effect on water quality. Sediment delivery ratios will be refined in concert with modelers to better assess the effect of conservation practices. An analysis will be completed based upon existing data and models. The cost and amount of sediment damage by resource impact will be assessed. The benefits of the implemented Federal and state sediment policies will be evaluated and reported for future planning and legislation. Alternative conservation and managerial practices on sediment delivery and water quality will be evaluated. The 1985 and 1990 Farm Bill conservation programs will be analyzed to determine the effect on sediment delivery and offsite impacts. Results of the USDA water quality initiative on reducing sediment delivery will be reported. Future trends in sediment yield under new production technologies will be assessed.

6. What Opportunities Exist In *Erosion* Management?

The effects on the environment and on resource management of wind and water erosion due to agricultural production and to climatic and geologic factors will be described, and the interrelationships between erosion and national policy on conservation, agricultural production, and the environment will be analyzed. The significance of ephemeral gully erosion and its causes will be presented and analyzed. The NRI erosion data and trends will be presented and analyzed. The impacts of current agricultural production (commodity) policy and of conservation and environmental policies on regional soil erosion levels will be estimated with EPIC and other models. A set of representative soils will be developed for RCA national analysis of soil erosion and water quality using the Second RCA pedon database. Losses in soil productivity due to erosion will be determined by region for 50, 100, 500 & 1,000 years. WEPP, WEPS and RUSLE improvements in soil erosion estimation techniques will be described and compared with the USLE. An interdisciplinary team will formulate a feasible set of erosion control conservation systems including sustainable agriculture to analyze alternatives for 1995-2005. The significance of using eroded versus uneroded soil phases in conservation planning will be evaluated in terms of existing conservation and commodity policies and programs. The effects of alternative erosion control policies on water quality, wildlife, crop yield, sediment delivery, and nutrient and pesticide movement will be analyzed. The effects of alternative conservation, commodity and environmental programs on soil erosion will be evaluated for different levels of demand. The changes in soil erosion that could result from restricted use of selected pesticides and nutrients and resulting changes in crop yields, management practices and cropping patterns will be analyzed.

7. What Opportunities Exist In *Wildlife And Fishery Habitat* Management?

The effects of agricultural current, alternative and future production, nutrient and pesticide management practices on wildlife and fishery habitat will be assessed and evaluated. The relationship between total resource management, both agricultural and non-agricultural, and their combined effects on wildlife and fishery resources will be analyzed. Existing patterns of avian diversity and dominance will be described and compared with projected results of future alternative agricultural production programs, policies and practices. The threatened and endangered species will be presented by region. Habitat conditions and changes resulting from agricultural practices will be presented as an index. Habitat models will be used to assess the impacts of current and proposed policies of wildlife management on biodiversity and avian diversity. Future wildlife response to changing land management treatments and USDA programs and regulations will be analyzed through an integrated production, conservation and environmental modeling system.

8. What Opportunities Exist In *Wetlands And Riparian Areas* Management?

The role of hydric and drained soils in agricultural production and the significance of wetlands and riparian areas in managing environmental quality and maintaining biodiversity and water quality will be evaluated. The effect of wetland and riparian area quality on wildlife and fisheries will be described. The type of information needed to conduct an analysis of changes in the quantity and quality of wetlands and riparian areas will be identified. The trends in wetland conversion, wetland losses due to erosion, sedimentation, etc., and wetland restoration by region will be analyzed using NRI and other data sources. The changes in the management and conservation of wetlands due to the 1985 and 1990 Farm Bills will be reported. The opportunities to facilitate wetland improvements through agricultural programs and policies will be analyzed. The tradeoff of alternative agricultural production, conservation and environmental policies and programs to conserve and restore wetland and riparian systems will be assessed.

9. What Opportunities Exist In *Agricultural Water* Management?

Water supply (ground and surface) and uses by agriculture and other sectors will be analyzed to determine current and future conflicting demands and competition for water. A hydrologic unit model of the U.S. (HUMUS) will be developed to assess these changes by hydrologic areas. The HUMUS model will be used to estimate the effects of droughts on crop and range production and interbasin transfers. Data on interbasin transfers, reservoir operations, irrigation requirements and nonagricultural water demands will be assembled for each hydrologic area. The 27-year-old crop irrigation requirements will be updated. Alternative conservation policies' effect on water supplies and basin flows will be estimated. The hydrologic impacts of the FSA and FACTA will be estimated. The enhancement of wetland conditions and productivity of cropland on wet soils will be assessed. Hypothetical farm inputs will be used to assess the hydrologic impact of diversified agricultural production patterns. Water recycling flows for agricultural use will be determined to estimate the hydrologic impact on individual watersheds. The value of irrigation water to local producers and rural communities will be assessed.

10. What Opportunities Exist In *Grazing Lands* Management?

The conservation and management of non-Federal grazing land in the production of food and fiber, and in sustaining water resources, air quality, aesthetics, wildlife habitat, recreation, forage conditions and other uses will be analyzed. The biological, economic, sociological and environmental viewpoints will be identified. The acreage, health and condition of grazing land will be described. Trends in soil erosion, woody species invasion and noxious weed infestations will be reported by region. Management effects on rangeland and other land conditions will be studied. Conservation treatment needs and managing rangeland for water quality will be assessed. Riparian and wetland areas will be studied. Conversion

ratios of rangeland to non-range uses will be estimated. Wildlife population impacts on rangeland capacity will be determined by region. Economic conditions necessary for the private sector to further initiate range improvements will be estimated. Future policy effects on rangeland conditions, conversion, weed populations, woody species and wildlife will be analyzed.

11. What Opportunities Exist In *Forest Land* Management?

The conservation and management of privately owned forest land in meeting national timber needs and in sustaining a healthy environment will be assessed. The management, condition, and production trends of forest lands and their role in the environment will be evaluated. The tax structure and its effect on privately owned forest lands will be assessed. Federal and state laws will be reviewed as to their effects on forest production and management. Agroforestry and its management for sustainability will be described to show how it affects the environment, regional woodland management, and production trends. Several case studies will be presented to illustrate response to management. Future production from tree planting and thinning activities will be estimated.

12. What Opportunities Exist In Agriculture Management To *Improve Water Quality?*

The management of pesticides, nutrients, sediment, erosion, and salinity will be used for a cohesive and comprehensive analysis of the relationships between agriculture and water quality. The relationship between water use and water quality will be described. The significance of a water quality benefit and water quality improvement will be identified by use. Procedures to measure water quality and its effect on agriculture will be described. Changes in agricultural practices and their effect on point and nonpoint contribution to water quality improvement or degradation will be measured. Potential conflict of pollutant-control practices aimed at "bottom of the root zone" and "edge of field" will be presented. Ground and surface water areas vulnerable to contamination from agricultural activity will be identified and ranked for potential risk of water quality degradation. The contribution of pesticides, nutrients, sediment, and salinity to water quality changes will be presented by region. The results of the Management Systems Evaluation Areas (MAES), Hydrologic Unit Areas (HUA) and demonstration projects' impact on changes in water quality will be presented. Nutrient management practices will be evaluated to assess the benefits of timing, amounts and methods of application. Simulation modeling will be used to enhance this analysis. A descriptive report on regional water quality status, trends, and potential changes will be prepared. A comparative analysis will be made of Federal, State and local policies on water quality. The status of State management plan implementation will be assessed. Other existing water quality data bases will be reported. An interdisciplinary and interagency team will design the modeling and analysis process to assess the effect of changes in management practices and farm policies on the environment and producer returns. A screening process will be designed to identify current and future potential water quality conditions before proceeding

with an analysis of an area's water quality condition. A GIS data base format will be used to exhibit all the data and results. The best regional practices for improving water quality will be identified. Water quality targeting criteria will be identified and an implementation plan formulated which uses alternative integrated cropping systems to conserve, protect or enhance the resources in a physically effective and economically efficient manner. Water quality effects of future trade and agricultural policies will be assessed along with the effect of targeting policies on agriculture production capacity, location of production, and producer returns.

13. What Opportunities Exist In Agriculture Management To Achieve A *Sustainable System?*

Sustainable agriculture production technology to improve fiber, fuel, and food production, resources, the environment and rural landscape preservation will be analyzed. The criteria and components of sustainable agriculture systems will be identified by region and farm type. Federal, state and local actions to encourage sustainable agriculture will be presented, as well as the trends for the past 30 years. Percentage of farmers using sustainable components in agriculture production will be identified by state, region, and farm type. Factors contributing to soil quality and sustainability will be presented. The capability of the soil as a composting medium for animal waste, sludge and urban organic matter will be analyzed and regional patterns presented. The role of sustainable components in a Total Resource Management plan will be presented. The components of alternative sustainable systems will be analyzed as to their effects on the environment. Case study and research findings on sustainable systems will be presented. Alternative sustainable agriculture production systems will be analyzed under several future scenarios.

14. What Opportunities Exist for Agriculture to Improve *Air Quality/Conditions?*

The effects of agricultural production and conservation activities on air quality and atmospheric deposition impacts on agriculture and woodland production will be analyzed. The long-range transport of trace toxins will be assessed. Regional differences and causes will be identified. The known effects of biofuels on changes in air quality will be presented. The NAPAP report findings will be presented and the implications for agriculture will be assessed. Lakes and streams likely to become acidic will be identified. Ozone pollution effects on crop and woodland production will be evaluated by region and future crop production patterns will be analyzed. The changes in UVB radiation and the effects on plant structure, nitrogen fixing and genetic consequences will be presented and evaluated. Future research needs will be studied and reported by a scientific team convened for this purpose.

ISSUE II: HOW COULD FORCES OUTSIDE AGRICULTURE AFFECT FUTURE RESOURCE USE AND CONDITION?

1. What Are The Effects Of *Global Change* On Conservation?

The environmental factors involved in global change and their effects on agricultural production will be presented. USDA Global Change Task Force's results will be presented, and findings will be used for 50-year projections. How global change may affect agricultural production, costs and conservation activities will be described. Current research and knowledge will be used to assess regional production impacts and changes in world production patterns. EMAP data will be used to assess change effects on the environment. The effect of global change on the use of conservation practices in agricultural production will be assessed. The effect of global change on yield/production variability will be estimated for the next 50 years. The influence of global change on alternative dietary patterns will be assessed. Alternative mitigation strategies will be evaluated. Global change's effect on future agricultural policy will be assessed.

2. What Are The Potential Impacts Of Producing *Biomass as Feedstock for Energy And Industrial Products* on Natural Resource Conservation?

The potential impacts of producing biomass as a feedstock for energy and industrial products on soil and water resources will be identified. Past trends in the production of biomass from crops and forestry products (hereafter referred to as biomass) as a feedstock for energy and industrial products will be identified. These trends, current policies, existing legislation, and projected levels of technological development in crop production and processing will be used to project alternative levels of demand for biomass. Alternative scenarios for producing the projected levels of demand for biomass will be developed. The impacts of the projected levels of demand for biomass on soil and water conservation or degradation or both, farm income, competition with food and fiber crops, and rural income and employment will be evaluated.

3. What Are The Effects Of *Nonagricultural Demands For Land?*

The nonagricultural uses of land and the past and current trends in nonagricultural uses will be reported, and the forces causing these trends in the future will be analyzed. The conversion of land to nonagricultural uses over time will be developed. The results of the "Land Evaluation Site Assessment" (LESA) as an effective tool to protect land in implementing the Farmland Protection and Policy Act will be analyzed. Additional changes needed to protect farmland will be suggested. Trends in urban buildup will be used to project future conversion rates for land. An analysis of data needs to accurately assess land conversion rates and trends will be completed. The increasing interest of the public in farmland protection will be chronicled and analyzed, and recommendations will be presented. The trends in forces causing the conversion of land to nonagricultural uses will be analyzed by region. An interagency team will study the goals and priorities to be considered in the conversion of land to

nonagricultural purposes. Alternatives for improving the implementation of farmland protection policy will be presented. State and local laws governing farmland protection will be compared and their effectiveness analyzed. Future conversion of land to nonagricultural uses will be estimated.

4. What Are The Effects Of *Nonagricultural Demand For Water?*

Trends in nonagricultural uses of water will be estimated and their impact on agricultural production patterns assessed. The significance of instream flows, withdrawals, and consumptive and nonconsumptive uses will be explained in assessing available water for agriculture. Trends in nonagricultural use by type will be reported by region. Instream flows and nonagricultural and agricultural demands will be categorized by month and region and reported for use by other analysts and model developers. The major water-related factors causing conversion of agricultural land to nonagricultural uses will be identified. The goals and priorities to be established in shifting water to nonagricultural uses will be identified, using an interagency task force. The effect of the water quality initiative on nonagricultural uses of water will be evaluated and reported by region. State and local policies on agricultural and nonagricultural uses will be compared and evaluated. The effect of land use protection policies on water uses will be evaluated and future trends assessed. The trend in nonagricultural uses will be estimated. Major nonagricultural growth factors affecting water use in each region will be identified.

ISSUE III: WHAT EFFECTS WILL FUTURE AGRICULTURAL RESOURCE, COMMODITY, CONSERVATION, ENVIRONMENT AND WORLD POLICIES HAVE UPON THE RURAL SOCIAL STRUCTURE, ECONOMY, AND CONSERVATION PARTNERSHIPS?

1. What Are The Effects Of Conservation Policies On The *Rural Sector?*

The interrelationship of Federal, state and local conservation policies and regulations and the rural sector will be estimated. The types of impacts and benefits of policies and programs will be studied through an input/output model and other qualitative and quantitative analyses. The regional effects will be evaluated based upon the key policy elements in FSA 85, FACTA 90, Clean Water Act, NEPA, FIFRA, Farmland Protection Act, Federal Regulations 95-3, and other conservation and environmental policies. Future scenarios addressing alternative world demands and conservation/environmental policies will be analyzed.

2. What Are The *Rural Sociological Factors* In Conservation Adoption?

The sociological discipline and its role in implementing conservation programs will be assessed. Demographic changes in the farm structure of agriculture and their effect on conservation adoption will be described. The effect of Federal, state and local laws and regulations on conservation attitudes and behavior will be assessed. The impact of land conversion on the rural sector will be presented. The attitudes

of farm and nonfarm public to use of agricultural chemicals will be assessed. The sociological effects of multiple resource use will be identified. The success of policies to assist limited resource and minority farmers will be evaluated. A sociological, economic and physical data base will be established using the NRI and Ag Census surveys. The most recent research on the sociological aspects of the adoption of conservation will be summarized. Technology transfer techniques used to implement the 1985 FSA and 1990 FACTA will be presented. Future changes in technology transfer techniques will be determined and evaluated.

3. What are the Effects of Conservation Policies on *Cultural Resources*?

The interrelationships between rural cultural resources and conservation policies on privately owned lands in our society will be assessed. Federal, state and local laws governing or affecting the protection of these resources will be compiled. The trend in policies for the conservation and protection of cultural resources on privately owned lands in rural areas will be compared to policies for Federal lands. A system to assess cultural rural resources will be pilot-tested. A model will be developed to predict changes due to agricultural practices. A GIS system using the SCS-GRASS, NRI, and cultural data will be developed. A nationwide assessment of cultural resource conditions will be completed using the newly developed methods. Effects of alternative agricultural practices and commodity and conservation programs on the protection of cultural resources will be analyzed.

4. What Is The *Role Of The Public* In Supporting Conservation?

The impact of educational, technical and financial assistance on the conservation of soil, water and environment will be estimated. An interdisciplinary-multiagency team will guide the analysis to identify the direct and indirect costs that Federal, state and local government should bear in conservation to achieve public goals and values. Public costs of conservation programs will be estimated at the federal, state and local levels. The equity issues of public and private conservation costs will be assessed. Regional differences in public and private costs will be evaluated and justification for such government expenditures to achieve public values will be analyzed. The benefits of governmental expenditures for conservation and the groups receiving such benefits will be identified. A redirection of national public agricultural commodity programs to land, water and environmental stewardship will be evaluated. Current Farm Bill conservation provisions' effect on public and private costs will be determined. Also, regional equity questions will be addressed as regional production patterns shift.

5. What Is The Role Of *Total Resource Management* In Planning Conservation?

The impact on resources of management systems at the farm unit, program, and national levels will be quantitatively and qualitatively assessed. Total resource management (TRM) will be defined with respect to its use in farm, program, and national planning, showing how it address the 5 natural resources: soil, water, air, plants, and animals, (SWAPA). Federal, state, and local policies which encourage TRM planning will be presented. The benefits of an interdisciplinary team approach to TRM will be presented. The interactions and effects of various management systems among resources as a result of TRM will be presented by region. A methodology to quantitatively assess the effects of management systems at the farm, program and national levels will be developed. TRM planning will be pilot tested to determine what state or local actions are necessary to implement TRM planning to integrate the physical, biological, and economic models. A set of different farm, program, and national systems will be analyzed to determine their qualitative and quantitative effects of resources.

6. What Is The Role Of *Recreation Management* In Conservation?

The interrelationship between recreation and conservation management on private and other nonfederal lands will be analyzed. Trends in recreation in rural areas will be analyzed and implications for future conservation activities will be discussed. Public demands for recreation, opportunities for recreation actions, and obstacles to recreation activity on privately owned lands will be assessed. A recreation data base for each state will be developed. The "President's Commission on American Outdoors" report will be discussed. The role of recreation in rural development and economic stability and in conservation policy will be assessed. A team will be used to determine state level needs for information and technical assistance. Case studies will be reviewed to determine what constitutes a successful recreation enterprise. A technology transfer plan will be developed to guide technical assistance for private landowner recreation planning and conservation management.

7. What Is The Role Of *Upstream Flood Management* In Conservation?

The major agricultural and nonagricultural upstream flood losses and reduction programs will be evaluated. The losses from upstream flood damage will be reported and future trends estimated. The cost and benefits of the PL 566 and 534 programs will be evaluated. The compatibility of the CRP and other programs in the management of upstream flood damages will be assessed. Flood plain management measures for flood reduction will be assessed using the "Unified National Program For Flood Plain Management."

8. What Is The Role Of *Federal, State, And Local Partnerships* in Conservation?

Conservation legislation at the Federal, state, and local levels requires various agencies, groups, and organizations to work together, thus establishing numerous partnerships for legislative implementation. Federal, state and local laws will be inventoried and the strength and weakness of each partnership assessed. The role and responsibilities of Federal, state and local partnerships in natural resources conservation will be described. The effective partnership structures to accomplish a conservation job will be determined to evaluate partnership roles based on current legislation and program objectives. The social, economic and environmental impetus which results in the current structure will be identified. The effects on partnership roles caused by: farming, urban environments, SCS field organization, legislation, communications, and agriculture technology will be identified. The effectiveness of lobby organizations and coalition teams in formulating partnerships will be assessed. Legislation, policies, and programs will be identified to strengthen the conservation partnerships for resource conservation, preservation and enhancement.

9. What Is The Role Of *Limited-Resource And Minority Farmers* In Conservation?

The impact of limited-resource and minority farmers (LRFs) on the conservation of soil and water resources will be determined. A USDA definition and policy for support of initiatives for conservation will be formulated to assist LRFs. Demographics on LRFs will be collected and correlated with natural resource data to develop an analytical data base for evaluating the status, conditions and trends with LRFs' production and conservation practices. The influence of existing USDA commodity and conservation programs on LRFs' ability to implement conservation will be determined. The impact of LRFs' management and conservation practices on the resource base will be evaluated with the aid of models. Proposed changes in programs will be presented and evaluated based on emerging legislative requirements to protect and conserve the resource base and to meet the needs of LRFs.

10. What Is The Effect Of the *Changing Work Force Composition* On Implementing Conservation?

Expertise needed in the future to maintain natural resource viability in research, policy formulation, technology transfer, technical assistance and technology development will be estimated and compared to trends in college and graduate degrees by profession and field of study. Skills needed by Federal, State and local governments and by natural resource and environment agencies will be identified. Baseline data by skills and background experience will be established by using past trends. Trends in the natural resource education and skills of college graduates and the dynamics of the change will be explained. The changes in clientele composition since FSA and FACTA legislation will be determined. Job descriptions and positions required to implement current and future natural resource legislation will be

analyzed for the next two decades. These needs will be matched to trends in college graduate work force composition and skills. Changes needed in future work force composition will be estimated and matched with environmental and natural resource needs over the next two decades. Alternative training methods to prepare college graduates of nonagricultural backgrounds for natural resource technical and technology transfer positions will be presented. A program to inform institutions of higher learning of the skills needed in natural resource conservation will be developed. Finally, policies to develop a skilled labor force to meet conservation and environmental needs will be proposed.

Assumptions and Long-Term Projections

Several assumptions are needed to complete the Third RCA Appraisal. These assumptions will be developed over the next few years as the need arises in coordination with other USDA and interdepartmental policy officials. Assumptions or criteria for analysis common to both the RCA and the Resources Planning Act (RPA) will be developed by and concurred upon by the Interagency Appraisal and Assessments Liaison Committee (IAALC). Decisions must be reached on the assumptions and projections for trends in population, disposable personal income, red meat consumption, gross national product, agricultural productivity, crop yield, livestock productivity, nonagricultural uses of land and water, conversion of agricultural cropland to other uses, etc. In addition, interdepartmental agreement on the application and use of existing or new physical and biological process models and natural resource economic models will be accomplished as model applications are developed. Data bases will also be agreed upon by the IAALC and other interdepartmental committees. All of these activities on assumptions, projections, data base coordination, and model coordination will be carried out by the Strategic Planning and Policy Analysis Staff in concert with the technical staffs and researchers involved in the RCA Appraisal.

Framework for the Analysis and Projections

A number of alternative policy and management changes in conservation, commodity, and environmental policies will be analyzed in the Third RCA Appraisal to assess environmental and economic benefits and costs of these alternatives. A sufficient number of alternatives are needed to identify and evaluate management policies that affect conservation protection and environmental enhancement of soil and water resources as described in the Soil and Water Resources Conservation Act.
Six steps will be followed to assess the environmental and economic benefits of the alternatives which will be developed over the next 3 years. Natural resource, environmental and other parameters to be considered are shown in *Figure 2* (page 22). The six steps are:

I. Base Projections for 2005 and 2050

1. Demand for food, feed and fiber for domestic consumption and export.
2. Technology-induced changes in agriculture yields.
3. Supplies of irrigation water from both surface and ground sources.
4. Land available for agricultural production of crops, livestock, forest products, energy, etc.
5. Policies and programs affecting agricultural production, such as FSA, FACTA, CWA, CZM, Endangered Species Act, pesticide and fertilizer use restrictions, management plans for agriculture.
6. Conservation management plans for agriculture.
7. Nonagricultural use of land and water.
8. Habitat conditions of suitable land and water areas, including instream flows, for fish and wildlife.

II. Changes in Future Conditions of Resource Base

1. Analyze changes of each item in base analysis.

III. Identification and Quantification of Resource Problems

1. Analyze the results of base analysis to determine the type of problems which exist and degree or extent of the problems.
2. Analyze what has caused the problems.

IV. Identification of Alternative Solutions

1. Identify alternative policies or programs to resolve the problems determined in III.
2. Formulate solutions which address the causes of the problems identified.

V. Comparison of Alternative Solutions

1. Compare the results of the alternative policies and programs with the base projection analysis.

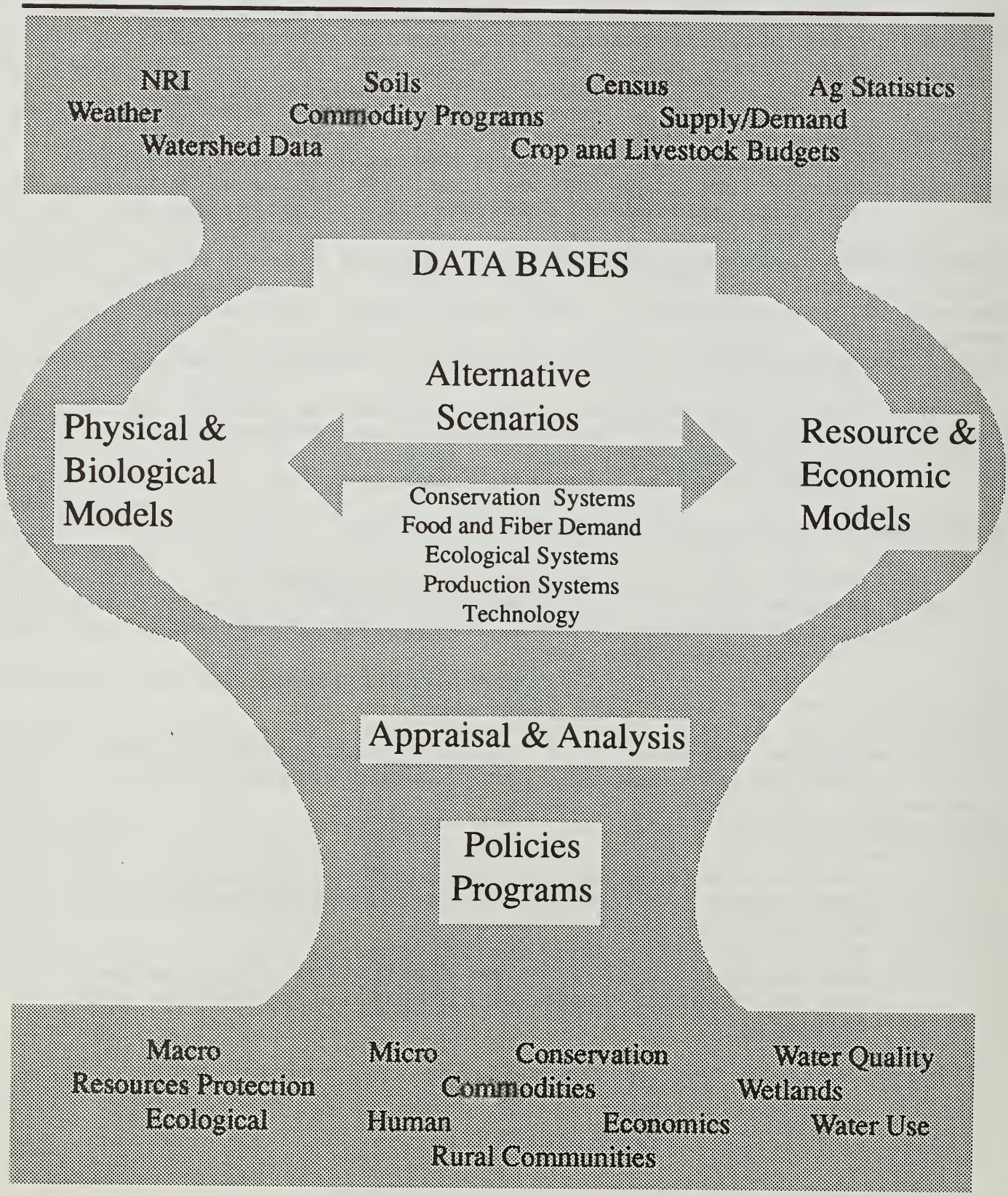
VI. Risk Analysis

1. Use the base analysis and alternative solutions comparisons to formulate optimistic and pessimistic outcomes.

2. Evaluate the effects of the alternative solutions on the environment, production stability, producers, and consumers.

Figure 2

Framework for RCA Conservation, Commodity, and Environmental Analysis



The IAALC will develop the needed assumptions about export levels, import levels, domestic demand, and domestic production methods. Some assumptions being proposed at this time include:

U.S. Export Levels:
Changes in EEC domestic and trade policies
Changes in agricultural production in southern and eastern Europe
Changes in agricultural production in southeast Asia
Changes in India's food self-sufficiency
Changes in Japan's beef and rice policies
Changes in production trends of Australia, New Zealand and South America

U.S. Import Levels:
Changes in imports of fruits, nuts, and vegetables
Changes in petroleum energy imports
Changes in red meat imports

U.S. Demand:
Changes in Hispanic and Asian immigration levels
Changes in ethnic food use
Changes in red meat and poultry consumption
Changes in production of industrial feedstocks
Changes in biomass production for energy
Changes in natural fiber use
Changes in U.S. middle and lower income classes buying power

U.S. Production:
Changes in national and state environmental enhancement programs (e.g., endangered species and federal reserved water rights vs. irrigation
Changes in pesticide and fertilizer use policies
Changes in current commodity programs and subsidies on land and water use
Changes in federal incentives to diversify agriculture
Changes in land use patterns due to shifts in water use, population, and food and fiber demand
Changes in farm size and location due to demand forces
Changes in world demand for food and fiber
Changes in production due to "Earth Summit" agreements

Coordination of the Third RCA Appraisal

SCS has been assigned the leadership, management and coordination responsibilities for the Third RCA Appraisal under the guidance of the Assistant Secretary for Natural Resources and the Environment. The successful completion of the Third Appraisal requires coordination among the USDA and Federal agencies involved in the protection and management of the Nation's public and privately owned resources. Some items needing coordination include data collection, research design, model formulation and development, field experimentation, policy and program directions, studies and evaluations. Coordination will involve USDA agencies, other Federal, state and local agencies, conservation

interest groups, commodity groups, agribusiness, and individuals. The public will be an integral part of developing the plan of work and reviewing the findings of the appraisal. The main concern in the coordination and management of the Third Appraisal is to (1) identify those organizations and individuals who are primarily concerned with the protection, conservation, enhancement, and management of privately owned natural resources; and (2) ensure all resource topic leaders understand how their area of study fits into the overall appraisal analysis.

USDA Interagency Coordination

The Assistant Secretary of Agriculture for Natural Resources and the Environment will guide the development of the Appraisal. The Appraisal will be conducted under the leadership of the Strategic Planning and Policy Analysis Staff(SPA) of the Soil Conservation Service. The Appraisal will be managed by a team of SCS Resource Concern Leaders, Resource Topic Leaders, and the SPA staff (Appendix II).

The seven other USDA agencies (FS, ASCS, CES, ERS, ARS, FmHA, CSRS) responsible for either technical, financial or educational assistance or the management of natural resources will assist in managing the Appraisal through the RCA Interagency Liaison Committee. The designated liaison of each agency will work directly with the Resource Concern Leaders and Resource Topic Leaders of SCS as that agency's representative. These liaisons will coordinate the reviews of draft reports, facilitate data collection, facilitate research requests, follow up on staff analysis assignments, coordinate staff assignments, etc.

Each of the seven agencies has identified a person to assist in each of the resource concern topic areas. These individuals will be contacted by SCS for agency assistance in the analysis and review processes. The agency's liaison representative is shown in Appendix II.

Interdepartmental Federal Agency Coordination

Other Federal agencies involved in the conservation, protection, enhancement and management of the nation's natural resources will be requested to identify one or more liaisons to assist in coordinating the Third RCA Appraisal with their agency. These liaisons will function in the same manner as the USDA liaisons. They will be on the RCA Interagency Liaison Committee. The following agencies have identified at least one liaison to participate in the Third RCA Appraisal: Environmental Protection Agency, Corps of Engineers, Bureau of Reclamation, Fish and Wildlife Service, Bureau of Land Management, U.S. Geological Survey, National Marine Fisheries Service, Council on Environmental Quality, National Oceanographic and Atmospheric Administration. These agency representatives are also shown in Appendix II. Other Federal agencies will be contacted as needs for their expert knowledge are identified.

Public Participation

The Third RCA Appraisal Plan of Work will be reviewed and commented on by congressional members and staff, conservation interest groups and individuals, commodity groups, agri-industry, and the general public. An information meeting/workshop to obtain public input in developing the plan of work will be held in Washington D. C. in September 1992. Additional assistance and public input will be obtained as the appraisal is developed and reviewed over the next 5 years. The draft appraisal report will be circulated to conservation interest groups, interested individuals, commodity groups, agribusiness, and USDA field offices for review and comment. Each State Food and Agricultural Council will be asked to coordinate State input. A notice of availability of the draft Appraisal report will be published in the Federal Register so that others may obtain a copy and comment on the contents and analysis. These comments will be used in preparing the final Appraisal report. Progress reports will be distributed to the current list of interest groups, individuals, USDA agencies, Federal agencies, and SCS national headquarters and state offices.

Advisory Committee

A technical advisory committee provided guidance in the formulation and development of models in the Second RCA Appraisal. This committee was organized in 1980 with agricultural economic natural resource modeling representatives from various regions of the nation. This committee combined two functions: to ensure regional differences were properly identified in the model formulation process, and to provide technical guidance in the analytical formulation of the various components of the models, i.e. water, irrigation, land conversion, soil erosion, water quality, etc.

For the Third Appraisal, the advisory committee will be expanded to include other areas of professional expertise and become a multidisciplinary group to provide guidance for the formulation and development of the many analytical methodologies and models used in the Third Appraisal. This committee will comprise the various disciplines that are involved in the management of natural resources of this nation. Regional and discipline representation, as well as modeling experience and expertise, will be the criteria in identifying membership for this committee.

Model Framework and Data Considerations

The modeling structure being developed in the Third RCA Appraisal is an integrated biological, physical, and economic, micro and macro modeling system. This integrated system of models will be capable of simultaneous consideration of the interactive tradeoff effects of commodity, conservation, and environmental regulations and policies and trade policies. It permits an assessment of the tradeoffs among various policy impacts on net returns to the producer, natural resources and environment, consumer prices, and rural economies. Three basic types of models will be used in assessing the effects of

alternative agricultural production opportunities on the natural resource environment. The types of models include physical, biological, and economic models. The "Framework for RCA Conservation, Commodity, and Environmental Analysis" is shown in Figure 2.

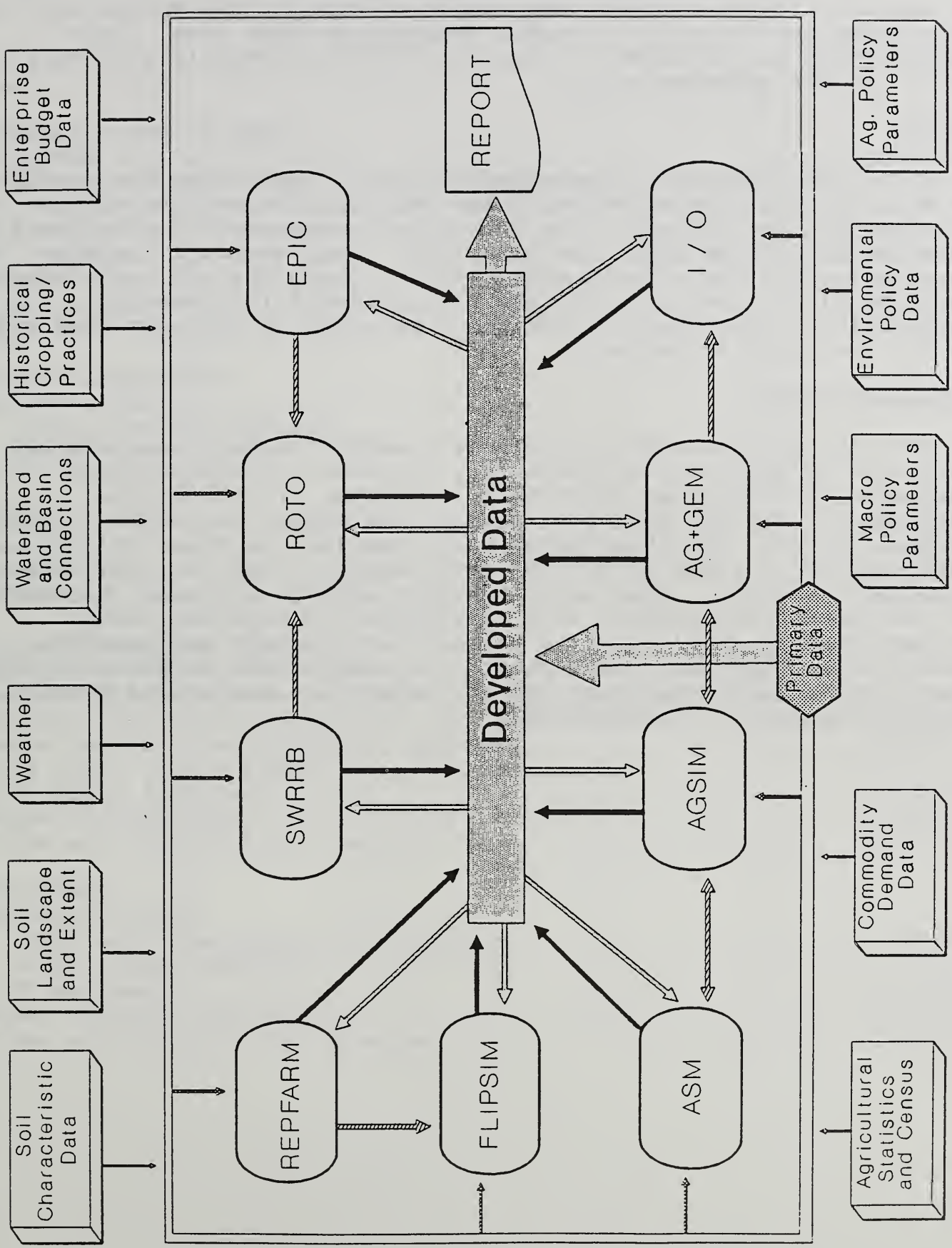
Great strides in modeling capabilities have occurred since the First and Second Appraisals. Many models have been designed, developed and tested during the 1980's. More important, significant advances in computer technology make it affordable to select and run most of these models for this appraisal. More changes in modeling capabilities and opportunities can be expected between now and 1995. This increases one's ability to simultaneously consider alternative opportunities for both crop production and conservation management practices to protect, conserve, and enhance the natural resources and the environment. However, these rapid changes will require close coordination in building newer models, updating existing models, and developing interlinking modeling systems and data bases for analyzing and evaluating alternative agricultural production activities, policies, and regulations.

Several types of physical, biological, and economic models will be used in the Third Appraisal. These models are either site-specific, that is, designed to evaluate the effect of agricultural activity on a particular location, or regional type models. The latter models have a very wide range of areal analysis, from a single field, to a watershed of a few thousand acres, to water resource regions of several million acres, and to interregional national and global models that assess world production and climate change.

A substantial data and model coordination effort will be carried out by the SPA staff to ensure that product output formats among the various process type models can be used as inputs in the more general analytical models and analysis. The Resource Concern Leaders and the Resource Topic Leaders will be involved in formulating how the outputs of their models can be used.

The SPA will develop the analytical and data base system for the simultaneous consideration of commodity, conservation, environmental, and trade policy analysis. A major part of the analytical and data base system has been developed as shown in Figure 3. This is a flexible process of linking the process models to the economic models to analyze any desired set of soils and practices. Economic spatial models will be tied to spatial natural resource classification systems. The choice of scenario will determine which natural resource classification will be used and its results will be compared with a baseline. This system will integrate the biological and physical models such as EPIC, SWURRB, etc. into the farm-level and regional models to assess world and domestic demands and prices. This system will show regional production patterns and shifts, interaction among farm policy and environmental policy to conserve and protect natural resources. It will assess the effect of management changes and policies (i.e. alternative pesticide and nutrient practices--IPM, ICM, TRM, biocontrols--conservation programs and practices, and commodity programs) on producer net returns, consumer prices, water quality, land

Figure 3 Graphic



use, water use, erosion, and sediment delivery, as well as wetlands, wildlife diversity, etc.

See Appendix IV for a brief description of some of the models and data bases being considered for the RCA analysis at this time. This appendix does not represent a complete listing of models available for use in the RCA Appraisal.

Schedule

The Third RCA Appraisal is expected to take 5 years from the design of the plan of work to completion of the report. The results will be used to formulate the strategic plan for natural resources, the National Conservation Program (NCP) for 1998-2007. This schedule includes time for congressional briefings; conservation, commodity and agri-industry input; public review; and USDA and other Federal interagency coordination. The schedules for the completion of the appraisal and of the NCP are shown in **Table 1.**

Staffing Requirements

The SCS will provide most of the staff needed for data analysis and evaluation of alternative strategies, policies, regulation and management opportunities to protect, conserve, or enhance the environment. The SCS will also prepare the report for public review and publication. The other seven USDA agencies and other Federal agencies will be asked to provide data support, analysis, and expert review and guidance. Some major research efforts and model formulation and development commitments will be required in selected areas; however, this is small relative to the overall staff requirements. **Table 2** shows the staff requirements for each of the 28 Resource Topic Areas. Staff requirements by Federal agency are summarized from the detailed listings in Appendix III.

TABLE 1

SCHEDULE FOR THIRD RCA APPRAISAL AND NCP UPDATE 1997 - 2007

Item	Completion Date
APPRAISAL PLAN OF WORK	
Drafted	**10/30/91**
Review by (resource topic leader coordinates)	
USDA (OBPA, ARS, FmHA, CES, ERS, CSRS, FS, ASCS)	01/31/92
SCS STC (written comments)	01/31/92
Federal agencies (EPA, USGS, COE, BOR, FWLS, etc.)	01/31/92
Revise draft	06/30/92
Review by public	09/15/92
Final POW	09/30/92
APPRAISAL ANALYSIS	
Implement POW	10/01/92
Topic Leaders meeting	
Model coordination	
Status Reports	
First	02/28/93
Second	06/30/93
Third	06/30/94
Fourth	06/30/95
Complete model development	12/93
NRI and CENSUS of AG available	1994
Complete RCA integrated analysis for 1995 farm bill	12/94
Complete other RCA analyses for 1995 farm bill	12/94
Update farm bill analysis for Appraisal	12/95
Topic Leader draft report	3/30/96
Draft Third Appraisal	12/30/96
Review of Appraisal	3/30/97
Revise and prepare final report	12/30/97
NCP UPDATE	
Develop NCP with	
USDA and interagency participation	10/95
Public participation	12/95
Draft document	12/30/96
Review (Federal and public)	03/30/97
Revise and prepare final program	12/30/97

Table 2

Staff Needs by Issue and Resource Topic Area
and by Agency, in Staff Months

Issue & Resource Topic Area	Staff Month	Agency
ISSUE I: WHAT MORE CAN AGRICULTURAL PRODUCERS AND POLICY MAKERS DO TO CONSERVE, PROTECT, AND ENHANCE THE ENVIRONMENT?		
RTA 1. What opportunities exist in pesticide management?		
	12.7	ARS
	.4	ASCS
	5.4	CSRS
	6.1	EPA
	36.4	ERS
	6.1	ES
	1.6	FS
	.2	NASS
	.4	OBPA
	52.5	SCS
	3.0	USGS
	1.0	Industry
	6.5	Contractor
	133.3	
RTA 2. What opportunities exist in inorganic fertilizer management?	23.6	ARS
	1.0	CSRS
	2.6	EPA
	8.1	ERS
	.5	ES
	66.0	SCS
	.2	USGS
	14.0	Contractor
	116.0	

RTA 3. What opportunities exist in organic fertilizer management?

15.2	ARS
.8	CSRS
6.2	EPA
4.6	ERS
49.7	SCS
5.2	USGS
8.0	Contractor
89.7	

RTA 4. What opportunities exist in salinity management?

15.5	ARS
.1	BLM
.3	BOR
.3	COE
1.1	EPA
2.4	ERS
36.1	SCS
.7	USGS
56.5	

RTA 5. What opportunities exist in sediment management?

1.8	ARS
2.0	BOR
2.6	COE
.2	CSRS
.5	DOT
2.9	EPA
.5	ERS
10.5	FERC
1.6	FWLS
1.4	ISC
.5	NOAA
49.8	SCS
26.2	USGS
12.0	Contractor
3.0	Public Assoc.
115.5	

RTA 6. What opportunities exist in erosion management?	3.5	ARS
	.1	ASCS
	.8	EPA
	2.3	ERS
	39.8	SCS
	.2	UOM
	46.7	
RTA 7. What opportunities exist in wildlife/fisheries habitat management?	.5	ARS
	.5	ASCS
	.1	ES
	.1	DOI
	3.3	EPA
	3.4	ERS
	55.0	FS
	2.2	FWLS
	.6	NWLF
	.2	SFI
	88.6	SCS
	154.5	
RTA 8. What opportunities exist in wetlands/riparian area management?	.1	ARS
	.3	ASCS
	.4	COE
	.9	EPA
	.2	ERS
	3.2	FS
	1.3	FWLS
	34.5	SCS
	40.9	
RTA 9. What opportunities exist in agricultural water quantity management?	1.0	ARS
	.5	BOR
	.2	COE
	.7	ERS
	1.7	FS
	--	NASS
	25.5	SCS
	.7	USGS
	30.3	

RTA 10. What opportunities exist in grazing lands management?	11.3	ARS
	9.9	ASCS
	1.0	BLM
	10.4	CSRS
	4.0	ERS
	10.4	ES
	13.7	FS
	1.0	FWLS
	87.7	SCS
	18.0	SRM
	12.0	TAES
	18.0	AF&GC
	4.0	Contractor
	204.5	
RTA 11. What opportunities exist in forest lands management?	2.5	CSRS
	.9	EPA
	1.0	ES
	5.4	FS
	15.3	SCS
	1.6	AFC
	3.0	WSU
	15.0	Contractor
	44.7	
RTA 12. What opportunities exist in water quality management?	8.3	ARS
	.1	ASCS
	11.6	EPA
	3.2	ERS
	3.7	ES
	2.3	FS
	.1	NASS
	.5	OBPA
	113.4	SCS
	1.8	USDA Task Force
	10.2	USGS
	12.0	State WQ Agencies
	167.2	
RTA 13. What opportunities exist in agricultural management to achieve a sustainable system?	6.2	ARS
	.1	ASCS
	6.1	CSRS
	2.2	EPA
	1.6	ERS
	8.3	ES
	37.7	SCS
	.5	IAA
	.5	ISU
	.5	VPI
	63.7	

RTA 14. What opportunities exist for agriculture to improve air quality conditions?	.3	ARS
	12.0	Contractor
	5.1	CSRS
	.2	EPA
	.6	ERS
	1.3	FS
	.5	NCS
	.5	Purdue
	2.9	SCS
	23.4	

ISSUE II--HOW COULD FORCES OUTSIDE AGRICULTURE AFFECT FUTURE RESOURCES USE AND CONDITIONS?

RTA 1. What are the effects of global change on conservation?	To be determined during draft review	
RTA 2. What are the potential impacts of producing biomass as feedstock for energy and industrial products on soil and water resource conservation?	0.3	ARS
	.2	CSRS
	.7	DOE
	.3	EPA
	.7	ERS
	.2	ES
	.2	FS
	.7	OE
	17.0	SCS
	13.0	Contractor
	33.5	
RTA 3. What are the effects of nonagricultural demands for land?	.1	COE
	4.2	ERS
	.2	FmHA
	.1	FWLS
	.1	FS
	15.4	SCS
	3.2	Universities
	.1	USGS
	13.0	Contractor
	36.3	
RTA 4. What are the effects of nonagricultural demands for water?	2.1	EPA
	3.0	ERS
	1.6	FS
	.5	NASS
	36.0	SCS
	1.5	USGS
	43.7	

ISSUE III--WHAT EFFECTS WILL FUTURE AGRICULTURE RESOURCE, COMMODITY, CONSERVATION, ENVIRONMENTAL AND WORLD POLICIES HAVE UPON THE RURAL SOCIAL STRUCTURE, ECONOMY, AND CONSERVATION PARTNERSHIPS?

RTA 1. What are the effects of conservation on the rural sector?	2.1	BEA
	.8	DOE
	.8	EPA
	5.2	ERS
	1.1	ES
	1.8	FS
	2.1	NASS
	2.5	REA
	20.7	SCS
	4.1	TAMUS
	.3	Tenn. U.
	41.5	
RTA 2. What are the rural sociological effects of conservation adoption?	.4	CSRS
	.4	ERS
	.8	ES
	99.9	SCS
	37.4	University
	138.9	
RTA 3. What are the effects of conservation policies on cultural resources?	.5	ERS
	41.5	SCS
	3.2	Nat'l Trust
	6.0	NCSHPO
	51.2	
RTA 4. What is the role of the public in supporting conservation?	5.0	ASCS
	3.0	EPA
	4.0	OBPA
	34.0	SCS
	1.4	Tenn. U.
	14.0	Contractor
	61.4	

RTA 5. What is the role of total resource management in conservation?	.2	BLM
	.2	BOR
	.2	CES
	.2	COE
	1.3	EPA
	1.1	ERS
	1.8	FS
	.2	NPS
	.4	OBPA
	77.1	SCS
	4.0	TAMUS
	6.0	Contractor
	92.7	
RTA 6. What is the role of recreation management in conservation?	.2	BLM
	.2	BOR
	.2	COE
	.5	ERS
	.7	ES
	16.2	FS
	.2	NPS
	.7	RDA
	43.9	SCS
	15.0	Clemson
	24.0	University
	101.8	
RTA 7. What is the role of upstream flood management in conservation?	.9	COE
	.3	EPA
	.2	ERS
	.3	FEMA
	.5	FS
	97.0	SCS
	.3	USGS
	99.5	

RTA 8. What is the role of federal, state, and local partnerships in conservation?	.1	ARS
	.7	ASCS
	.5	EPA
	.9	ERS
	.8	ES
	.1	FCA
	60.9	SCS
	.1	Banks
	16.0	Contractor
	5.0	NACD
	.6	NACO
	1.1	NASDA
	1.0	Massey
	87.8	
RTA 9. What is the role of limited resource and minority farmers in conservation?	5.1	ASCS
	.5	BOC
	3.4	CSRS
	3.7	ERS
	.4	ES
	4.6	FmHA
	.2	FS
	25.5	SCS
	3.0	OAE
	10.0	University
	56.4	
RTA 10. What is the effect of the changing work force composition on implementing natural resource conservation?	To be determined during draft review	

Subtotal by Agency	Staff Months
ARS	100.4
ASCS	31.2
BLM	1.5
BEA	2.1
BOR	3.2
COE	4.9
CSRS	35.1
DOE	1.5
EPA	47.1
ERS	88.4
ES	34.1
FCA	.1
FmHA	4.8
FWLS	6.2
FERC	10.5
FS	106.6
ISC	1.4
NASS	2.9
NOAA	.5
NPS	.4
OBPA	5.3
OE	.7
RDA	.7
SCS	1,258.4
USGS	47.4
Contractors	133.5
Universities	117.6
Other	90.3
	2,136.8
Management report preparation, public comment, review and publication	80.0
Total Staff Time in months	2,216.8

Note: Staff time requirements for two Resource Topic Areas have not yet been determined.

Appendix I

Public Law 95-192
95th Congress

An Act

To provide for furthering the conservation, protection, and enhancement of the Nation's soil, water, and related resources for sustained use, and for other purposes.

Nov. 18, 1977
[S. 106]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Soil and Water Resources Conservation Act of 1977".

Soil and Water Resources Conservation Act of 1977.
16 USC 2001 note.

FINDINGS

SEC. 2. The Congress finds that:

16 USC 2001.

(1) There is a growing demand on the soil, water, and related resources of the Nation to meet present and future needs.

(2) The Congress, in its concern for sustained use of the resource base, created the Soil Conservation Service of the United States Department of Agriculture which possesses information, technical expertise, and a delivery system for providing assistance to land users with respect to conservation and use of soils; plants; woodlands; watershed protection and flood prevention; the conservation, development, utilization, and disposal of water; animal husbandry; fish and wildlife management; recreation; community development; and related resource uses.

(3) Resource appraisal is basic to effective soil and water conservation. Since individual and governmental decisions concerning soil and water resources often transcend administrative boundaries and affect other programs and decisions, a coordinated appraisal and program framework are essential.

DEFINITIONS

SEC. 3. As used in this Act:

16 USC 2002.

(1) The term "Secretary" means the Secretary of Agriculture.

(2) The term "soil, water, and related resources" means those resources which come within the scope of the programs administered and participated in by the Secretary of Agriculture through the Soil Conservation Service.

(3) The term "soil and water conservation program" means a set of guidelines for attaining the purposes of this Act.

DECLARATIONS OF POLICY AND PURPOSE: PROMOTION THEREOF

SEC. 4. (a) In order to further the conservation of soil, water, and related resources, it is declared to be the policy of the United States and purpose of this Act that the conduct of programs administered by the Secretary of Agriculture for the conservation of such resources shall be responsive to the long-term needs of the Nation, as determined under the provisions of this Act.

16 USC 2003.

(b) Recognizing that the arrangements under which the Federal Government cooperates with State soil and water conservation agencies and other appropriate State natural resource agencies such as those concerned with forestry and fish and wildlife and, through conservation districts, with other local units of government and land users,

have effectively aided in the protection and improvement of the Nation's basic resources, including the restoration and maintenance of resources damaged by improper use, it is declared to be the policy of the United States that these arrangements and similar cooperative arrangements should be utilized to the fullest extent practicable to achieve the purpose of this Act consistent with the roles and responsibilities of the non-Federal agencies, landowners and land users.

(c) The Secretary shall promote the attainment of the policies and purposes expressed in this Act by—

(1) appraising on a continuing basis the soil, water, and related resources of the Nation;

(2) developing and updating periodically a program for furthering the conservation, protection, and enhancement of the soil, water, and related resources of the Nation consistent with the roles and program responsibilties of other Federal agencies and State and local governments; and

Reports to Congress and public.

(3) providing to Congress and the public, through reports, the information developed pursuant to paragraphs (1) and (2) of this subsection, and by providing Congress with an annual evaluation report as provided in section 7.

APPRAISAL

16 USC 2004.

SEC. 5. (a) In recognition of the importance of and need for obtaining and maintaining information on the current status of soil, water, and related resources, the Secretary is authorized and directed to carry out a continuing appraisal of the soil, water, and related resources of the Nation. The appraisal shall include, but not be limited to—

Contents.

(1) data on the quality and quantity of soil, water, and related resources, including fish and wildlife habitats;

(2) data on the capability and limitations of those resources for meeting current and projected demands on the resource base;

(3) data on the changes that have occurred in the status and condition of those resources resulting from various past uses, including the impact of farming technologies, techniques, and practices;

(4) data on current Federal and State laws, policies, programs, rights, regulations, ownerships, and their trends and other considerations relating to the use, development, and conservation of soil, water, and related resources;

(5) data on the costs and benefits of alternative soil and water conservation practices; and

(6) data on alternative irrigation techniques regarding their costs, benefits, and impact on soil and water conservation, crop production, and environmental factors.

(b) The appraisal shall utilize data collected under this Act and pertinent data and information collected by the Department of Agriculture and other Federal, State, and local agencies and organizations. The Secretary shall establish an integrated system capable of using combinations of resource data to determine the quality and capabilities

for alternative uses of the resource base and to identify areas of local, State, and National concerns and related roles pertaining to soil and water conservation, resource use and development, and environmental improvement.

(c) The appraisal shall be made in cooperation with conservation districts, State soil and water conservation agencies, and other appropriate citizen groups, and local and State agencies under such procedures as the Secretary may prescribe to insure public participation. Public participation.

(d) The appraisal shall be completed by December 31, 1979, and at each five-year interval thereafter during the period this Act is in effect. Completion dates.

SOIL AND WATER CONSERVATION PROGRAM

SEC. 6. (a) The Secretary is hereby authorized and directed to develop in cooperation with and participation by the public through conservation districts, State and national organizations and agencies, and other appropriate means, a national soil and water conservation program (hereinafter called the "program") to be used as a guide in carrying out the activities of the Soil Conservation Service which assist landowners and land users, at their request, in furthering soil and water conservation on the private and non-Federal lands of the Nation. The program shall set forth direction for future soil and water conservation efforts of the United States Department of Agriculture based on the current soil, water, and related resource appraisal developed in accordance with section 5 of this Act, taking into consideration both the long- and short-term needs of the Nation, the landowners, and the land users, and the roles and responsibilities of Federal, State, and local governments in such conservation efforts. The program shall also include but not be limited to— Development. 16 USC 2005. Contents.

(1) analysis of the Nation's soil, water, and related resource problems;

(2) analysis of existing Federal, State, and local government authorities and adjustments needed;

(3) an evaluation of the effectiveness of the soil and water conservation ongoing programs and the overall progress being achieved by Federal, State, and local programs and the landowners and land users in meeting the soil and water conservation objectives of this Act;

(4) identification and evaluation of alternative methods for the conservation, protection, environmental improvement, and enhancement of soil and water resources, in the context of alternative time frames, and a recommendation of the preferred alternatives and the extent to which they are being implemented;

(5) investigation and analysis of the practicability, desirability, and feasibility of collecting organic waste materials, including manure, crop and food wastes, industrial organic waste, municipal sewage sludge, logging and wood-manufacturing residues, and any other organic refuse, composting, or similarly treating such materials, transporting and placing such materials onto the

land to improve soil tilth and fertility. The analysis shall include the projected cost of such collection, transportation, and placement in accordance with sound locally approved soil and water conservation practices;

(6) analysis of the Federal and non-Federal inputs required to implement the program;

(7) analysis of costs and benefits of alternative soil and water conservation practices; and

(8) investigation and analysis of alternative irrigation techniques regarding their costs, benefits, and impact on soil and water conservation, crop production, and environmental factors.

Completion dates.

(b) The program plan shall be completed not later than December 31, 1979, and be updated at each five-year interval thereafter during the period this Act is in effect.

REPORT TO CONGRESS

16 USC 2006.

SEC. 7. (a) On the first day Congress convenes in 1980 and at each five-year interval thereafter during the period this Act is in effect the President shall transmit to the Speaker of the House of Representatives and the President of the Senate, the appraisal and the program as required by sections 5 and 6 of this Act, together with a detailed statement of policy regarding soil and water conservation activities of the United States Department of Agriculture.

(b) Commencing with the fiscal year ending September 30, 1982, the President shall, not later than thirty days after the submission of the budget for each fiscal year, prepare and transmit to Congress a report expressing in qualitative and quantitative terms the extent to which the programs and policies projected under the budget meet the statement of policy submitted under subsection (a) of this section. In any case in which the budget recommends a course which fails to meet the statement of policy, the President shall set forth in his report under this subsection the reasons for requesting Congress to approve the lesser program or policies presented in the budget.

(c) The Secretary, during budget preparation for fiscal year 1982 and annually thereafter during the period this Act is in effect, shall prepare and transmit to the Congress, through the President, a report to accompany the budget which evaluates the program's effectiveness in attaining the purposes of this Act. The report, prepared in concise summary form with appropriate detailed appendices, shall contain pertinent data from the current resource appraisal required to be prepared by section 5 of this Act, shall set forth the progress in implementing the program required to be developed by section 6 of this Act, and shall contain appropriate measurements of pertinent costs and benefits. The evaluation shall assess the balance between economic factors and environmental quality factors. The report shall also indicate plans for implementing action and recommendations for new legislation where warranted.

Legislative recommendations.

AUTHORIZATION FOR APPROPRIATIONS

SEC. 8. There are authorized to be appropriated such funds as may be necessary to carry out the purposes of this Act. 16 USC 2007.

EFFECTIVE DATE

SEC. 9. In the implementation of this Act, the Secretary shall utilize information and data available from other Federal, State, and local governments, and private organizations and he shall coordinate his actions with the resource appraisal and planning efforts of other Federal agencies and avoid unnecessary duplication and overlap of planning and program efforts. 16 USC 2008.

SEC. 10. The provisions of this Act shall terminate on December 31, 1985. Termination date. 16 USC 2009.

Approved November 18, 1977.

LEGISLATIVE HISTORY:

HOUSE REPORT No. 95-344 accompanying H.R. 75 (Comm. on Agriculture).
SENATE REPORT No. 95-59 (Comm. on Agriculture, Nutrition, and Forestry).
CONGRESSIONAL RECORD, Vol. 123 (1977):
Mar. 23, considered and passed Senate.
June 6, considered and passed House, amended, in lieu of H.R. 75.
Nov. 2, Senate concurred in House amendments with an amendment.
Nov. 3, House agreed to Senate amendment.

○

Appendix II

Soil Conservation Service Resource Concern and Topic Leaders, and USDA RCA Interagency Liaisons

I. RESOURCE TOPIC LEADERS BY RESOURCE TOPIC AREA

Resource Topic Area	*Resource Topic Leaders*
1. What opportunities exist in pesticide management?	Gene Gilbert
2. What opportunities exist in inorganic fertilizer management?	Gene Gilbert
3. What opportunities exist in organic fertilizer management?	Gene Gilbert
4. What opportunities exist in salinity management?	Peter Patterson
5. What opportunities exist in sediment management?	Jerry Bernard
6. What opportunities exist in erosion management?	David Schertz
7. What opportunities exist in wildlife/fisheries habitat management?	Steve Brady
8. What opportunities exist in wetlands/riparian area management?	Steve Brady
9. What opportunities exist in water quantity management?	Don von Wolffradt
10. What opportunities exist in grazing lands management?	Harlan DeGarmo
11. What opportunities exist in forest lands management?	Terry Johnson
12. What opportunities exist in agricultural management to improve water quality?	Peter Patterson
13. What opportunities exist in agricultural management to achieve a sustainable system?	Marc Safley
14. What opportunities exist in agricultural management to improve air quality?	Lee Herndon
15. What are the effects of global change on conservation?	Richard Arnold
16. What are the effects of producing biomass as feedstock for energy and industrial products on natural resource conservation?	Thyrele Robertson

17. What are the effects of non-agricultural demands for land?	Lloyd Wright
18. What are the effects of non-agricultural demands for water?	Don von Wolffradt
19. What are the effects of conservation policies on the rural sector?	Liu Chuang
20. What are the rural sociological factors in conservation adoption?	Frank Clearfield
21. What are the effects of conservation policies on cultural resources?	Mike Kaczor
22. What is the role of the public in supporting conservation?	Liu Chuang
23. What is the role of total resource management in conservation?	James Maetzold
24. What is the role of recreation management in conservation?	Gary Jann
25. What is the role of upstream flood management in conservation?	Don von Wolffradt
26. What is the role of federal, state, and local partnerships in conservation?	Karl Reinhardt
27. What is the role of limited resource and minority farmers in conservation?	Maxine Barron
28. What is the effect of the changing work force composition on implementing natural resource conservation?	Maxine Barron

II. RESOURCE CONCERN LEADERS

Tommy George
Ed Riekert
Marc Safley
Peter Smith
Gale TeSelle
Peter Tidd
Manly Wilder (Chairman)
Gail Updegraff

III. RCA INTERAGENCY LIAISONS

1. U.S. Department of Agriculture

Name	*Agency*
Doral W. Kemper	ARS
James R. McMullen	ASCS
Berlie Schmidt	CSRS
William Anderson	ERS
Dennis Ebodaghe	ES
David Spellman	FmHA
Adrian Haught	FS
Gerald Larson	OBPA

2. Other Federal Agencies

Name	*Agency*
Neil Van Zandt	BLM
Tom Phillips	BOR
Frank Skidmore	CEQ
William Klesch	COE
Peter Kuch	EPA
Gene Whitaker	FWLS
John Hall	NMFS
Dean Stallings	NOAA
David Moody	USGS

APPENDIX III

Resource Topic Areas Plan of Work

A standard format of **5 tasks** is used in each resource topic area plan of work. **Task 1** is an introduction explaining the how, what, why, and where--i.e., the nature and extent of the work. **Task 2** is an assessment of "Current Status and Trends" and **Task 3**, "Technical Methods and Data Collection," is concerned with new and developing technology, model development and data needs. **Task 4** is an evaluation of "Alternative Solutions" to conserve, protect and enhance natural resources. **Task 5**, "Future Policy Analysis," undertakes the simultaneous consideration of the effects of various conservation, commodity, trade and environmental policies on the protection, conservation, and enhancement of natural resources. The name of the lead person for each task and subtask in **Appendix III** is underlined.

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN PESTICIDE MANAGEMENT?--DRAFT DRAFT

Resource Topic Leader: Gene Gilbert
(doc rcaPES3, 23 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--PESTICIDE MANAGEMENT, WHAT? WHY? HOW? WHEN?				
Task 1.1--Describe the role of pesticide use and management in effective agricultural production today. Describe how pesticides affect the environment when not properly managed, including surface and groundwater supplies.	**Gilbert,SCS**	.1		
	Lander,SCS	.1		
	Stierna,SCS	.1		
	Fowler,FS	.1		
	Manale,EPA	.1		
Task 1.2--Develop an issue paper to address pesticide use and management for sustainable agriculture production. Describe the effect of agrichemicals on the environment and associated risks to human health. The issue paper must identify, organize, and clarify the issue. It should identify what we know--real vs. perceived problems--and what values to address. What are the causes and effects of these problems? What does society expect for the environment? What are the effects of chemicals on: water quality, wildlife habitat, ecology, farm income, production, prices, etc.? This policy will assist Federal, state and local program/policy decision making.	**Gilbert,SCS**	.2		
	Ullery,ES	.2		
	Antognini & Kearney,ARS	.2		
	ASCS	.2		
	OBPA	.2		
	Fowler,FS	.2		
	Riley,CSRS	.2		
	ERS	.2		
	Contractor	4.0		
	Krider,SCS	.1		
	Comer,SCS	.1		
	Theurer,SCS	.1		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Identify pesticide users--i.e., agriculture, urban, highway, industry. Estimate amount of each pesticide used by type of user from existing data sources. Using existing surveys, show the socioeconomic characteristics of each user type, i.e., large, medium, small farmers, urban vs. suburban households, etc. and the amounts used.	**ERS**	1.0		
	ES	.2		
	CSRS	.2		
	Gilbert,SCS	.1		
	SPA,SCS	.1		
	Clearfield,SCS	.2		
	Fowler,FS	.1		
	Manale,EPA	.1		
Task 2.2--Estimate the average amount of each pesticide used per acre and crop in the production of fruits, vegetables, feed grains, food grains and fiber crops. Provide totals for state, regional and national levels.	**ERS**	6.0		
	ES	.2		
	NASS	.2		
	CSRS	.1		
	Gilbert,SCS	.1		
	SPA,SCS	.2		
	Manale,EPA	.2		
	USGS			
Task 2.3--Estimate the quantity of pesticides used per acre and total pounds applied by commodity program crop, crop rotations, and other agricultural crops shown in **Task 2.2.** Show state, regional and national totals for each practice, soil texture and rotation.	**ERS**	.5		
	SPA,SCS	.1		
	Gilbert,SCS	.1		
	Krider,SCS	.1		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.4--Estimate pesticide application rates by chemical for different tillage practices, soil textures, crop rotations, etc. Show state, regional and national totals for each. Use data from **Tasks 2.2 and 2.3.**	**Antognini,ARS**	1.0		
	Lander,SCS	.5		
	Gilbert,SCS	.5		
	SPA,SCS	.1		
	ERS	.1		
	Manale,EPA	.2		
	USGS	.1		
Task 2.5--Analyze trends in pesticide use and characteristics, such as AI/acre, chemical/pest selectivity, pesticide half life, annual changes due to climatic and economic conditions, and pesticide form, etc.	**Gilbert,SCS**	.5		
	ES	.1		
	CSRS	.1		
	SPA,SCS	.1		
	ERS	.1		
	Manale,EPA	.1		
	Krider,SCS	.1		
Task 2.6--Compare the quantities of pesticides (AI/acre) by high volume pesticide used on major crops with the percentages of those crops lost to pest damage for the period 1940-1990 at 5 year intervals.	**Ullery,ES**	1.0		
	ERS	.1		
	Antognini,ARS	.1		
	Riley,CSRS	.1		
	Gilbert,SCS	.1		
	Lander,SCS	.1		
	SPA,SCS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.7--Describe the role of agrichemical use in current farm management production and conservation practices. Describe how alternative chemicals have changed farm management practices such as planting time, labor needs, labor diversity, labor flexibility, erosion reduction, relative costs, farm structure, monoculture, diversification, etc. Describe agrichemical use in farm management. Include agrichemicals' effects on crop production and conservation practices and how they change over time.	**Gilbert,SCS**	.2		
	Colvin & Antognini,ARS	.2		
	ERS	.1		
	SPA,SCS	.1		
	Ullery,ES	.1		
	NWQTDS,SCS	.2		
	Manale,EPA	.1		
	USGS	.1		
	Krider,SCS	.2		
Task 2.8--Identify Federal, State and local policies and regulations which affect the use, handling and disposition of pesticides. Make a comparative analysis.	**Gilbert,SCS**	1.0		
	Contractor	2.0		
	SPA,SCS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Assemble an interdisciplinary and interagency team to develop the modeling process to complete the Third Appraisal POW. Design the biological, physical and economic models' interconnections to analyze alternative agricultural production practices, and the effect of agricultural policies on the environment, location of production, market prices and producer returns. Explain the theoretical basis to model the fate and transport of agriculture chemicals into the ground and surface water. Explain why hydrologic groups, soil leaching, soil taxonomy, GIS, aquifer recharge areas, etc. are important for the analyses. Determine if the Don Goss "Soil and Pesticide Screening" process is adaptable. Consult with the SCS model review team. Evaluate the different models with respect to the fate and transport concepts and select models for RCA analysis. Coordinate the fate and transport modeling--and nutrient topics-- to ensure an economic analysis is achieved. Coordinate this task with the nutrient topics.	**Woodward,SCS** Gilbert,SCS Neilsen,SCS Antognini,ARS Riley,CSRS ERS Manale,EPA SPA,SCS Fowler,FS USGS Lander,SCS Krider,SCS Comer,SCS Theurer,SCS	.8 .5 .5 .3 .5 .1 .5 .5 .5 .5 .5 .1 .5 .5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Develop a risk assessment process to use for communication of pesticide risks for producers, labor, communities and the ecological system. Present the results of most recent studies on risks of agricultural chemical use. Show how chemical use risks have changed over time as management has become specialized. Use models to develop the methodology for risk assessment using the EPA risk assessment process and their health advisory limits as standards. The modeling process should predict probabilities of harmful impacts of alternative chemicals, and lead to practical management techniques for risk assessment and risk communication.	**Gilbert,SCS**	.5		
	NWQTDs,SCS	.5		
	ENG,SCS	.5		
	Contractor	24.0		
	ERS	.2		
	SPA,SCS	.2		
	ARS	.5		
	Manale,EPA	.5		
	Fowler,FS	.5		
	USGS	.2		
	Krider,SCS	.5		
	Comer,SCS	.5		
	Theurer,SCS	.5		
Task 3.3--Evaluate biological diversity as a tool to manage pests in agricultural production. Discuss what is known about the effectiveness of the technology of biological diversity management compared to chemical pesticides in controlling pests, disease, fungi. Discuss factors such as monoculture, crop rotations, plant health, soil conditions, which promote or limit biodiversity management techniques.	**Coppedge,ARS**	2.0		
	ES	1.0		
	ERS	.2		
	Riley,CSRS	1.0		
	ECO,SCS	1.0		
	SPA,SCS	.5		
	Brady,SCS	.5		
	Nielsen,SCS	.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.4--Present the latest information, using knowledge based artificial intelligence systems, to evaluate the effect of alternative production and conservation practices on the transport of pesticides into surface and ground water. Coordinate with the economic assessment on pesticide use.	**DeCoursey,ARS,&** Hatfield & Dowdy, ARS	2.0		
	Bluhm,SCS	2.0		
	Krider,SCS	1.0		
	Woodward,SCS	1.0		
	CSRS	.5		
	ERS	.5		
	SPA,SCS	.5		
	Gilbert,SCS	1.0		
	Lander,SCS	1.0		
	Manale,EPA	1.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Identify Integrated Crop Management Systems (ICMS) which could reduce or modify pesticide use. Estimate the effect on pesticide fate and transport of changes in conservation and management practices. Develop this information to assess the economic effect on producers, land use, environment and water quality. Ensure results are compatible with the economic model analysis. Incorporate the results into a GIS data base.	**Lander,SCS**	2.0		
	Gilbert,SCS	1.5		
	Riley,CSRS	1.0		
	Antognini,ARS	1.0		
	ES	.5		
	ERS	.5		
	Manale,EPA	.5		
	USGS	.5		
	TeSelle,SCS	1.0		
	Krider,SCS	1.0		
Task 4.2--Analyze the economic incentives to farmers for adoption of reduced input or input substitute technology. Use the SCS - GIS database system to analyze the relative changes in agricultural production costs necessary to encourage reduced chemical use.	**ERS**	10.0		
	SPA,SCS	2.0		
	Gilbert,SCS	.2		
	Lander,SCS	.2		
	ASCS	.2		
	TeSelle,SCS	2.0		
	Krider,SCS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.3--Present the findings of the Water Quality Initiative Evaluation--Hydrologic Units and Demonstration Projects. Report the effect of conservation management practices on water quality. Estimate the effect of conservation management on producer returns, production, product quality, etc. Compare these results to those estimated in **Task 4.2.**	**Sutton,SCS**	2.0		
	Kellogg,ERS	1.0		
	ES	.2		
	Riley,CSRS	.2		
	Bucks,ARS	.2		
	Manale,EPA	.1		
	USGS	.1		
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Estimate the effect, for a 10 year period of proposed policies, regulations, standards, limits, conservation and commodity programs, marketing orders, and world trade using the modeling processes in **Task 3.2** and data developed in **Task 4.3.** Evaluate these effects on production, land use, producer returns, consumer prices, and global trade and present results using the GIS data system.	**SPA,SCS**	4.0		
	ECO,SCS	4.0		
	Gilbert,SCS	2.0		
	ERS	1.0		
	ES	1.0		
	Fowler,FS	.2		
	Manale,EPA	1.0		
	USGS	1.0		
	TeSelle,SCS	.3		
Task 5.2--Evaluate feasible biocontrol agents to protect crops from pests, disease, and fungi in food, feed and fiber production. Assess the effect on producers, consumers and natural resources. Use artificial intelligence knowledge based expert systems and economic resource models.	**Soper,ARS**	3.0		
	SPA,SCS	4.0		
	ERS	1.0		
	Brady,SCS	2.0		
	CSRS	1.0		
	Manale,EPA	1.0		
	ASCS	.5		
	OBPA	.2		
	ES (NABPAP)	1.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 5.3--Assess the effect existing information will have on future technology trends in pesticide selectivity in AI/acre, risk, pesticide volatility etc. and probable effect on the environment.	**Antognini,ARS,** & Coppedge, Faust, Civerolo,& Kearney,ARS	2.0		
	Industry	1.0		
	CSRS	.5		
	SCS	.5		
	ES	.5		
	Manale,EPA	.5		
	USGS	.5		

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN INORGANIC FERTILIZER MANAGEMENT?--DRAFT DRAFT

Resource Topic Leader: Gene Gilbert
(doc rcaIOF3, 23 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--INORGANIC FERTILIZER--WHAT? WHEN? WHY? HOW?				
Task 1.1--Describe the role of inorganic fertilizer in agricultural production today. Describe how inorganic fertilizer use affects the environment, specifically surface and ground water quality.	**Follett,ARS**	1.0		
	Power,ARS	.5		
	Schertz,SCS	.1		
	Gilbert,SCS	.1		
	Moore,SCS	.1		
	Nielsen,SCS	.1		
	Krider,SCS	.1		
	Lander,SCS	.1		
	Parry,EPA	.1		
Task 2--CURRENT STATUS AND TRENDS				
Task 2.1--Report inorganic nutrient uses for agricultural and nonagricultural purposes (urban, roads, industry and recreation). Estimate the quantity of nitrogen and phosphorus available (applied and existing) by source and region. Estimate the amount of nitrogen and phosphorus applied by crop and region for all agricultural and horticultural crops grown on soil. Report trends in use by crop by region based upon 319 plans and other data sources.	**ERS**	2.0		
	SPA,SCS	.1		
	Gilbert,SCS	.1		
	Lander,SCS	.1		
	Krider,SCS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.2--Identify federal, state and local policies and regulations which affect the use of fertilizers for agricultural and nonagricultural purposes. Make a comparative analysis of the various federal, state and local policies.	**Gilbert,SCS**	.5		
	Lander,SCS	.5		
	Contractor	2.0		
	Moore,SCS	.2		
	ERS	.1		
	Parry,EPA	.1		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Identify soil and plant physical and biological factors which determine how nutrients are managed and describe how these factors affect water quality. Present the scientific and theoretical concepts which explain contamination of surface and ground water. Explain how management (timing of application, crop rotation, tillage practices, soil texture, conservation practices, physical/biological process, etc.), can minimize the unwanted effects on the environment of nutrient application.	**Follett,ARS**,& Schepers, Sharpley,& Power,ARS	1.0		
	Gilbert,SCS	.1		
	Lander,SCS	.5		
	Neilsen,SCS	.5		
	Krider,SCS	.2		
Task 3.2--Identify the problems caused by nutrients (nitrogen, phosphorus, etc) related to surface runoff and ground water infiltration. Use the NLEAP model to develop a nitrate leaching index to identify areas vulnerable to nutrient problems ("hot spots").	**Follett,ARS**	.2		
	Sharpley,ARS	1.0		
	Shaffer,ARS	1.0		
	Neilsen,SCS	1.0		
	Gilbert,SCS	1.0		
	Lander,SCS	.2		
	Krider,SCS	.2		
	Lemunyon,SCS	2.0		
	ERS	1.0		
	SPA,SCS	.2		
	Onstad,ARS	.2		
	Parry,EPA	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3--Organize an interagency and multidisciplinary team to report on the status of models which analyze the fate and transport of nutrients for the RCA appraisal. Evaluate these models and select, modify or develop them to meet RCA needs to (1) estimate fate and transport of nutrients and assess their impact on the environment and (2) determine effect of alternative conservation and production management practices on yield and producer returns. Coordinate this **task** with pesticide and organic nutrient topics.	**Gilbert,SCS**	2.5		
	Lemunyon,SCS	1.0		
	Comer,SCS	.5		
	Lander,SCS	.2		
	Benson,SCS	.2		
	Neilsen,SCS	.2		
	Parry,EPA	.2		
	USGS	.2		
	Krider,SCS	.1		
	Onstad,ARS	.2		
	Kemper, Williams,& Ahuja,ARS	1.0		
Task 3.4--Present the latest information and research on nutrient management in agriculture and the effect on the environment. Identify what is known about yield and nutrient management. Use existing information developed from the water quality demonstrations, research, MSEA, HUA's, process models, etc.	**Follett,ARS,** Onstad, & MW MSEA Coord., ARS	1.6		
	Thicke,ES	.5		
	Schmidt,CSRS	.4		
	Gilbert,SCS	.2		
	Lander,SCS	.2		
	Benson,SCS	.2		
	Neilsen,SCS	.1		
	Krider,SCS	.2		
		.2		
Task 3.5--Estimate by region the portion of applied nutrients that is lost to runoff and infiltration. Consider crop production management and conservation practices using process models (i.e., EPIC, NLEAP) research, demonstration results and other existing data.	**Benson,SCS**	2.0		
	Onstad, Williams,& Shaffer,ARS	2.0		
	Lemunyon,SCS	2.0		
	Contractor	6.0		
	Krider,SCS	1.0		
	Lander,SCS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.6--Estimate the effect of alternative inorganic fertilizer management systems on soil productivity, soil tilth, erosion, soil-moisture relationships, etc.	**Gilbert,SCS**	4.0		
	Lander,SCS	1.0		
	Shaffer,ARS	1.0		
	Williams,ARS	1.0		
	SPA,SCS	1.0		
Task 3.7--Develop an AI (artificial information) system with existing information and research. Evaluate the effect of alternative management and conservation practices on the fate and transport of nutrients in surface and ground water. Evaluate the effects of various commodity, conservation and environmental policy alternatives. Coordinate this with economic and trade models.	**Bluhm,SCS**	4.0		
	Renard, Sharpley, Smith,& Carter,ARS	1.6		
	SPA,SCS	2.0		
	Lander,SCS	1.0		
	Gilbert,SCS	1.0		
	Neilsen,SCS	1.0		
	Krider,SCS	1.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Identify Integrated Crop Management Systems (ICMS), such as: grid application technology, crop rotations, conservation practices, fertilizer application timing, banding, banning, etc. Assess management strategies to attain more efficient use of nutrients and maintain yields. Assess fate and transport of nutrients and impact on surface and ground water quality under these systems.	**Follett,ARS**	.5		
	Meisinger, Smith, Sharpley,& Carter,ARS	1.6		
	Lander,SCS	1.0		
	Gilbert,SCS	1.0		
	Nielsen,SCS	1.0		
	Benson,SCS	2.0		
	Schmidt,CSRS	.5		
	Krider,SCS	1.0		
	Onstad,ARS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.2--Estimate the effect of reduced nutrient inputs on crop yields; use information developed in **Task 3.4.** Determine the combined effect of climate change and reduced nutrient inputs on crop yields. Assess the economic impacts of these reduced inputs for producers.	**Benson,SCS**	6.0		
	Lemunyon,SCS	2.0		
	ERS	2.0		
	Schepers, Williams, Sharpley,& Carter,ARS	2.0		
	TeSelle,SCS	2.0		
	Lander,SCS	.5		
	Onstad,ARS	.2		
Task 4.3--Analyze conservation management practices of alternative and sustainable agriculture systems which use reduced input, crop rotations, etc. Use the information from **Task 3.3.** to identify highly vulnerable areas or "hot spots". Include the national and regional impact of these nutrient management changes on production, land use, producer returns and consumer prices. Incorporate results into a functional GIS data base.	**Benson,SCS**	2.0		
	Sutton,SCS	.5		
	O'Connell,CSRS	.1		
	Safley,SCS	.1		
	Atwood,SCS	.2		
	ERS	1.0		
	Kemper, Williams,& Schepers,ARS	1.0		
	TeSelle,SCS	1.0		
	Onstad,ARS	2.0		
	Lander,SCS	2.0		
	Parry,EPA	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.4--Compare the reductions in nutrient use of alternative and sustainable agriculture systems with estimated corresponding reductions in nonagricultural uses by region.	**ERS**	1.0		
	Lander,SCS	1.0		
	Onstad,ARS	1.0		
	Gilbert,SCS	1.0		
TASK 5--FUTURE POLICY ANALYSIS				
	SPA,SCS	4.0		
Task 5.1--Evaluate changes in land use, nutrient application, and agriculture's production capacity, as a result of reduced nutrient application rates, new technology, and management designed to meet conservation, commodity, environmental and trade policies. Evaluate how improved nutrient management will reduce onsite and offsite effects by region. Identify the onsite and offsite "hot spots" and potential problem areas based on projected future crop production patterns, geological conditions and management practices. Estimate the economic impact on producers of mitigating "hot spots" and potential problem areas when conforming to the proposed policies.	ERS	1.0		
	Contractor	6.0		
	Gilbert,SCS	1.0		
	Lander,SCS	1.0		
	Onstad,ARS	1.0		
	Parry,EPA	1.0		
Task 5.2--Design BMP's that can minimize the transport of nitrates into groundwater, to the end that water standards are met or maintained.	Patterson,SCS			
	Parry,EPA			
	Bucks,ARS			
	ASCS			

Third RCA Appraisal
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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN ORGANIC FERTILIZER MANAGEMENT?--DRAFT DRAFT

Resource Topic Leader: Gene Gilbert
(doc rcaORF3, 23 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--ORGANIC FERTILIZER--WHAT? WHEN? WHY? HOW?				
Task 1.1--Describe the role of organic fertilizer as nutrient source in today's agricultural production. How does it affect the quality of the environment as a nutrient source and a byproduct (animal waste)? How does it affect surface and ground water quality?	**Follett,ARS**	1.2		
	Doran,ARS	.4		
	Parr,ARS	.4		
	Lander,SCS	.2		
	Gilbert,SCS	.1		
	Krider,SCS	.2		
	Nielsen,SCS	.1		
	USGS	.1		
	Long,EPA	.1		
	Schmidt,CSRS	.1		
	Onstad,ARS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Report the type of agricultural and nonagricultural point and nonpoint sources of organic nutrients by region using existing data. Consider the various forms of organic sources (i.e., organic fertilizer, organic waste, composting materials, plant residues, processing plants, C/N ratio, soil nutrient levels). Estimate, by location, the amount of nitrogen and phosphorus produced by crops and animals, distinguishing point and nonpoint sources by crop, by animal type, and by location. Identify areas affected and vulnerable to nutrient problems, using an index of vulnerability. Display this information in a GIS data system.	**Krider,SCS** ERS Gilbert,SCS Nielsen,SCS SPA,SCS Parr,ARS Parkin,ARS Reeves,ARS Long,EPA USGS TeSelle,SCS Lander,SCS Onstad,ARS	6.0 2.0 1.0 1.0 .5 .5 .5 .5 1.0 2.0 .2 .2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.2--Identify Federal, state and local policies and regulations which affect the use, handling and disposition of organic fertilizers and wastes. Make a comparative analysis of the various Federal, state and local policies.	**Gilbert,SCS**	.5		
	Lander,SCS	.2		
	Contractor	2.0		
	Krider,SCS	1.0		
	ERS	.2		
	Long,EPA	.2		
	USGS	.2		
	Onstad,ARS	.2		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Identify the soil and plant physical and biological qualities which determine how nutrients are managed and how these factors affect water quality. Present the scientific theoretical and empirical knowledge which explains the fate and transport of nutrients which contaminate surface and ground water. Explain how farm management can minimize the effect of organic nutrient application on the environment.	**Doran,ARS**	.5		
	Sharpley,ARS	.5		
	Schepers,ARS	.5		
	Carter,ARS	.5		
	Gilbert,SCS	.5		
	Lander,SCS	.4		
	Nielsen,SCS	.2		
	Krider,SCS	1.0		
	Long,EPA	.2		
	USGS	.2		
	ERS	.2		
	Onstad,ARS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Form an interagency and multidisciplinary team to select models for organic nutrients. Models selected will analyze the fate and transport of nutrients for the RCA appraisal and--(1) estimate fate and transport of inorganic nutrients, and (2) determine the effect of alternative production and conservation systems on the environment. Coordinate this research with economic models to assess producer returns, as well as with pesticides and inorganic nutrient topics.	**Gilbert,SCS**	1.5		
	Karlen,ARS	.3		
	Williams,ARS	.3		
	Kemper,ARS	.4		
	Krider,SCS	1.0		
	Comer,SCS	.5		
	Lander,SCS	.5		
	Benson,SCS	.5		
	Neilson,SCS	.5		
	Long,EPA	.5		
	USGS	.5		
Task 3.3--Present what is known about organic nutrient management in agricultural production and the environmental effects, plus a short summary of current research topics.	**Krider,SCS**	3.0		
	Doran,ARS	.4		
	Carter,ARS	.3		
	Parkin,ARS	.3		
	Schmidt,CSRS	.5		
Task 3.4--Present information on how management of organic fertilizer in agriculture affects point and nonpoint pollution sources. Explain the role of management techniques and technology in relation to organic fertilizer application, storage and disposition of farm wastes and manures. Identify BMP's by region of the country and by type of waste (manures, poultry carcasses, etc.).	**Krider,SCS**	4.0		
	Smith,ARS	.5		
	Power,ARS	.5		
	Long,EPA	.5		
	ERS	.5		
	USGS	.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.5--Analyze the effect of USDA and other invested cost-share funding programs on improving animal waste facilities. Compare this information with what is necessary for efficient and adequate organic nutrient management.	**Heimlich,EPA**	2.0		
	Krider,SCS	.2		
	Bucks,ARS	.2		
Task 3.6--Develop an expert system based on artificial information to analyze the fate and transport of nutrients from organic fertilizer. This system or model will evaluate the relationships of conservation to commodity and environmental policies and programs. Coordinate this modeling process with other regional and economic modeling efforts.	**Bluhm,SCS**	4.0		
	Ahuja,ARS	.5		
	Renard,ARS	.5		
	Doran,ARS	.5		
	Meisinger,ARS	.5		
	SPA,SCS	1.0		
	Schertz,SCS	.5		
	Krider,SCS	2.0		
	Neilsen,SCS	.2		
	Schmidt,CSRS	.2		
	ERS	.2		
	Long,EPA	.2		
	USGS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Examine technologies which will improve the management of point and nonpoint sources of organic nutrients. Report what is known about alternative management systems of point and nonpoint sources and discuss the technology being developed. Identify limitations which would forestall adoption of the technology to improve the environment. Evaluate the effects of this new technology on the environment using engineering models of **Task 3** where possible. Determine the economic impacts for the producer of these management systems.	**Krider,SCS** Power,ARS Smith,ARS Benson,SCS Comer,SCS Neilsen,SCS ERS CSRS Long,EPA USGS	3.0 .5 .5 2.0 .5 .5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Evaluate how improved nutrient management will reduce onsite and offsit effects of agricultural pollution. Identify regional potential onsite and offsite "hot spots" (problem areas) **(Task 2.1)** determine the extent to which geographical production patterns are favored by commodity, conservation and environmental policies. Address organic fertilizer as a resource for soil productivity and crop production. All sources of organic fertilizer must be considered to determine the amount of inorganic fertilizer needed to achieve anticipated yields. Show how excess waste disposal can overload the soil.	**SPA,SCS** Contractor Gilbert,SCS Schertz,SCS Krider,SCS Karlen,ARS Sharpley,ARS Long,EPA USGS ERS	2.0 6.0 1.0 1.0 2.0 .5 .5 .5 .5 .5		
Task 5.2--Develop a framework to prepare a nutrient management plan for each state and region of the country. Base the plans on projections of sources of organic nutrients for current and future production patterns. Utilize information developed in **Tasks 3.4 and 5.1.**	**Gilbert,SCS** Meisinger,ARS Krider,SCS ERS Long,EPA USGS	2.0 2.0 3.0 1.0 1.0 1.0		

Third RCA Appraisal
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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN SALINITY MANAGEMENT?--DRAFT DRAFT

Resource Topic Leader: Peter Patterson
(doc rcaSAL3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--SALINITY, SALT WATER INTRUSION, AND SALINE SEEPS-- WHAT? HOW? WHY? WHEN?				
Task 1.1--Explain what salinity is. Describe how it has occurred and its relationship to water quality and quantity. Discuss the effect on different soil types and production. Explain how it affects the environment, and water quality. Explain how toxicity affects plants, livestock, wildlife, humans, etc.	**Patterson,SCS** Rhoades,ARS Terrell,SCS Mausbach,SCS BOR BLM USGS Dyballa,EPA	.2 .2 .1 .2 .1 .1 .1 .1	10/1/92	11/1/92
Task 1.2--Explain what salt water intrusion is. Discuss the factors which cause it. Explain the effects on water quality, crop production, etc.	**Patterson,SCS** Rhoades,ARS Mausbach,SCS Terrell,SCS Seinwill,SCS	.2 .2 .2 .1 .1	10/1/92	11/1/92
Task 1.3--Explain what saline seep is. Discuss how it occurs on the landscape and what has contributed to its prevalence. Explain how it affects production and the environment.	**Patterson,SCS** Rhoades,ARS Mausbach,SCS Terrell,SCS Seinwill,SCS Halvorson,ARS	.2 .2 .2 .1 .1 .1	10/1/92	11/1/92

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Quantify current status and trends of soil and water salinity. Describe its effect on agricultural production, wildlife, fisheries and water quality by region.	**Patterson,SCS**	2.0	11/1/92	2/1/93
	Rhoades,ARS	.5		
	ERS	.1		
	SPA,SCS	.1		
	Mausbach,SCS	.2		
	Seinwill,SCS	.1		
Task 2.2--Quantify the current status, trends, and the causes of salt water intrusion by area. Describe its effect on water quality and agriculture.	**Patterson,SCS**	.5	11/1/92	2/1/93
	Rhoades,ARS	.5		
	Mausbach,SCS	.1		
	Terrell,SCS	.1		
	Seinwill,SCS	.1		
Task 2.3--Quantify current status, trends and the cause of saline seep. Describe its effect on agricultural production and the environment by region.	**Haly,SCS**	1.0		
	Patterson,SCS	.5		
	Rhoades,ARS	.5		
	Terrell,SCS	.1		
	Seinwill,SCS	.2		
	Dyballa,EPA	.1		
	USGS	.1		
	Halvorson,ARS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Identify those agricultural production practices which have caused salinity, salt water intrusion, and saline seeps, and estimate associated agricultural and nonagricultural costs by region. Identify those measures and practices which can reclaim saline and salt water intrusion areas and saline seeps, and estimate associated costs by region. Use models to the greatest extent possible in this analysis.	**Haly,SCS**	6.0		
	Schertz,SCS	2.0		
	Patterson,SCS	.2		
	Terrell,SCS	.1		
	Seinwill,SCS	.1		
	Moore,SCS	.2		
	Rhoades,ARS	1.0		
	USGS	.2		
	Dyballa,EPA	.1		
Task 3.2--Analyze the effect irrigation water management has on salinity. Evaluate several irrigation water application rates as to frequency and amounts to assess the effect on salinity, water quality and yield by the use of process models. Assess water management effect on water quantity, water quality, crop rotations, etc.	**Rhoades,ARS**	4.0		
	Wenberg,SCS	.5		
	Moore,SCS	.2		
	Seinwill,SCS	2.0		
	Walker,SCS	.2		
	USGS	.1		
	BOR	.1		
	COE	.1		
	Dyballa,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3--Analyze the interrelationship of agricultural irrigation or drainage on salinity and salt water intrusion. Report the latest technology to reclaim or restore or reduce salinity and related problems with technically proven methods.	**Rhoades,ARS**	1.0		
	Wenberg,SCS	.5		
	Seinwill,SCS	1.0		
	Patterson,SCS	.2		
	Dyballa,EPA	.1		
	COE	.1		
	USGS	.1		
	Walker,SCS	.1		
	Mausbach,SCS	.1		
Task 3.4--Analyze the effect of saline seeps on agricultural production levels and costs by crop and location using models and other existing data.	**ERS**	2.0		
	Patterson,SCS	.2		
	Benson,SCS	.2		
	Seinwill,SCS	.2		
	Rhoades,ARS	.2		
	Halvorson,ARS	.2		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Assess the regional effects of current commodity, conservation, environmental and trade policies upon salinity conditions, irrigation water management, salt water intrusion and saline seeps, etc. Compare these findings with alternative commodity, conservation, environmental and trade policies. Develop production coefficients for regional and farm level models.	**Rhoades,ARS**	4.0		
	Benson,SCS	2.0		
	Mausbach,SCS	.5		
	SPA,SCS	.2		
	Patterson,SCS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.2--Assess the effect of increased nonagricultural water use upon salinity and its management via irrigation water management, water availability, seasonal availability, timing of irrigation, etc. by region for various commodity, conservation and environmental policies and other agricultural production (i.e., fruits, vegetables, foliage, etc).	**Patterson,SCS**	2.0	2/1/93	6/1/93
	Walker,SCS	1.0		
	Seinwill,SCS	.5		
	Haly,SCS	.5		
	Moore,SCS	.5		
	Rhoades,ARS	.3		
	ERS	.2		
	Dyballa,EPA	.2		
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Analyze the effect proposed conservation, commodity, environmental and trade policies would have upon salinity conditions by region. Assess how water management will be affected. Determine the impact on wildlife and fisheries.	**SPA,SCS**	2.0		
	Patterson,SCS	.5		
	Terrell,SCS	.4		
	Seinwill,SCS	.2		
	Rhoades,ARS	.5		
	Brady,SCS	.5		
	Dyballa,EPA	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 5.2--Evaluate the effect of yield maximization versus profit maximization upon irrigation water management and salinity reclamation, conditions and trends with the use of models.	**Rhoades,ARS**	1.0		
	Benson,SCS	1.0		
	Terrell,SCS	.5		
	Seinwill,SCS	.5		
	Schertz,SCS	.5		
	Mausbach,SCS	.5		
	Patterson,SCS	.3		
	Walker,SCS	.2		
	Dyballa,EPA	.1		
Task 5.3--Assess the long-term salinity conditions that could possibly occur on agricultural lands. Assemble a team of experts to address and report on this issue for the RCA. Reclamation of saline seeps and countermeasures against salt water intrusion will also be reported.	**Patterson,SCS**	1.0	6/1/93	8/1/93
	Rhoades,ARS	1.0		
	Terrell,SCS	.2		
	Moore,SCS	.2		
	ERS	.1		
	USGS	.1		
	Dyballa,EPA	.1		
	BOR	.1		
	COE	.1		

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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN SEDIMENT MANAGEMENT--DRAFT DRAFT
Resource Topic Leader: Jerry Bernard
(doc rcaSED3, 11 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--SEDIMENT--HOW DOES IT OCCUR? WHAT DOES IT DO? WHY ARE WE INTERESTED?				
Task 1.1--Explain how sediment results from agricultural production practices, nonagricultural activities, and natural processes and the amount each contributes to the total. Explain what causes sediment, i.e. topography, weather, soil, soil texture, farm practices, changes in vegetative cover, crop rotations, monoculture, land use/class etc. Explain its effects on the environment. Illustrate why it should be a concern for conservation planning and water quality management such as its relation to soil erosion, runoff, etc.	**Iivari,SCS** Foster,ARS USGS CSRS ISC Fontenot,SCS LTD,SCS CPA,SCS Heimlich,EPA	1.0 .4 .2 .2 .2 .2 .2 .2 .2		
Task 1.2--Coordinate all activities with the Interagency Sedimentation Committee (ISC).	**Bernard,SCS**	1.0		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND CONDITIONS				
Task 2.1--Report gross erosion and sediment yield by source/process (sheet and rill, ephemeral gully, gully, and streambank erosion). Determine sediment yield by land use (cropland, pasture and range, forest, urban, farmstead, etc.). Report data by basin maps and tables. Identify critical areas.	**RID,SCS**	2.0		
	Bernard,SCS	.5		
	GIS,SCS	2.0		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Discuss how sediment damages water quality. Identify what soil properties contribute the most to sediment formation and explain how geomorphic characteristics interact with sediment and water quality. Describe the transport process and the "enrichment ratio".	**Bernard,SCS**	.5		
	Iivari,SCS	.2		
	ISC,USDA	.2		
	Theurer,SCS	.2		
	Owens,SCS	.2		
	Waldo,SCS	.2		
	LTD,SCS	.2		
	Oxford,loc.off. ARS	.2		
	Durant,loc.off. ARS	.2		
	Heimlich,EPA	.2		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Assemble an interdisciplinary and multi-agency team and coordinate with the Interagency Sedimentation Committee. Identify what types of information are needed to improve sediment measurements and determine sediment's benefits and impacts on water quality and other environmental factors. Identify what is needed for process models to measure the effects of conservation practices on sediment. Meet with process modelers and water quality analysts to determine improvements needed in sediment delivery ratios. Improvements include the ability to measure effect of conservation practices, water quality practices, farm programs, environmental policies, etc. Work with the ARS modelers to update the sediment delivery ratios with the use of their models. Compare the results of the latest ratios with those used in other water quality analyses and report the implications of any changes from previous RCA appraisals, other analyses, and published data. Identify the methodology which can be applied at the technical assistance level and the models available for such use.	**Bernard,SCS** Iivari,SCS Farrell,SCS CPA,SCS LTD,SCS Burt,SCS ISC,USDA Fontenot,SCS Comen,SCS Foster,ARS USGS Theurer,SCS Heimlich,EPA	2.0 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5 .5		
Task 3.3--Amount and Cost of Sediment Damage				
Task 3.3a--Municipal and industry water treatment.	**Contractor** **Public Assoc.**	12.0 3.0		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3b--Fish and wildlife habitat (commercial fisheries including shellfish, sport fishing).	**Reckendorf,SCS**	2.0		
	Teels,SCS	.1		
	Brady,SCS	1.0		
	Cooper,ARS	.5		
	USGS	.5		
	BOR	.5		
	FWLS	.5		
Task 3.3c--Irrigation reservoirs, return basins, ditches and canals.	**Reckendorf,SCS**	.5		
Task 3.3d--Drainage ditches and canals.	**Waldo,SCS**	.5		
	Reckendorf,SCS	.5		
Task 3.3e--Transportation: navigation channels, canals, estuaries, harbors, dredging, craft size limitations, etc.	**Iivari,SCS**	.5		
	FWLS	.1		
	COE	.1		
Task 3.3f--Recreation infringements from turbidity, impaired safety, loss of facilities: swimming, boating, hunting, esthetics, etc.	**Iivari,SCS**	1.5		
	Jann,SCS	.5		
	FWLS	.5		
	BOR	.5		
Task 3.3g--Road ditch maintenance, damage, impaired road safety, drainage impairment, etc.	**Waldo,SCS**	2.5		
	Iivari,SCS	2.5		
	Reckendorf,SCS	2.5		
	MWTC	2.5		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3h--Flooding due to loss of channel, culvert, bridge capacity, flood frequency, urban sediment disposition/damage, etc	**Kearney,SCS**	2.0		
Task 3.3i--Reservoir filling that impairs recreation, power, flood protection, municipal and industry supply etc.	**FERC**	10.0		
	COE	1.0		
	BOR	1.0		
	SCS	1.0		
Task 3.3j--Crop and cropland loss from overwash, burial, abrasion, etc.	**Waldo,SCS**	2.0		
Task 3.3k--Conservation practice damage and repair.	**Kearney,SCS**	2.0		
Task 3.3l--Reclamation and restoration of surface water bodies by dredging, sluicing. Report existing studies i.e. Great Lakes, etc.	**Iivari,SCS**	2.0		
	Kearney,SCS	2.0		
	COE	1.0		
	USGS	1.0		
	EPA	1.0		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.4--Identify data sources and evaluate the roles and contribution each data source can play in water quality analysis. Publish a report for Federal, State and local governments to use in water quality assessment and in evaluating the benefits of policies being implemented. Data sources to include are: 305b/EPA, 319/EPA, STORET/EPA, WATSTOR/USGS, USGS gage analysis, reservoir survey analysis--subcommittee of FIAWCG, water resource documents of SCS, BOP, COE, TVA, BLM, FS, state agencies, special agencies, etc.--, USGS published and open file reports, NRI, COE dredge reports, BOR studies, state/county/local transportation reports, drainage district , FWS, RFF, NOAA, COE rating procedures, university reports, etc.	**USGS** ERS COE FWLS Heimlich,EPA SCS DOT FERC NOAA ISC,USDA	24.0 .5 .5 .5 .5 .5 .5 .5 .5 .5		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Identify conservation practices, farm management practices (rotations, etc), and environmental practices which affect sediment delivery and water quality (i.e., pesticide, phosphorus etc). Evaluate the effect each practice has on sediment delivery, water quality, and other selected offsite impacts. Offsite impacts to be measured will be determined by ISC. Evaluate effect of 1985 FSA conservation provisions on sediment and offsite effects, 1990 Farm Bill, EPA regulations, etc.	**Bernard,SCS** Alt,SCS Owen,SCS Burt,SCS Fontenot,SCS ISC,USDA Iivari,SCS LTD,SCS CPA,SCS Heimlich,EPA	4.0 1.0 .2 .2 .2 .2 .6 .2 .2 .2		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Estimate sediment delivery from agricultural land based upon current farm bill, conservation and trade policies. Use the latest models available to estimate sediment damages by type and impact on water quality.	**Bernard,SCS**	2.0		
	Alt,SCS	.5		
	Burt,SCS	.1		
	Tidd,SCS	.1		
	Andreuccetti, SCS	.1		
	Heimlich,EPA	.1		
Task 5.2--Report the findings of the evaluation of the USDA water quality initiative.	**Sutton,SCS**	.5		
	WQCC,SCS	.2		
Task 5.3--Provide guidance for long-term 50-year scenario development.	**Bernard,SCS**	.5		
Task 5.4--Project future trends in sediment yield using existing research and forecasts of conservation practices. Identify new efforts needed to obtain forecast data. Use the new information for better forecasts.	**Bernard,SCS**	1.0		
	Theurer,SCS	.2		
	Alt,SCS	.2		
	Schertz,SCS	.2		
	Owens,SCS	.2		
	Heimlich,EPA	.2		

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN EROSION MANAGEMENT?--DRAFT DRAFT

Resource Topic Leader: Dave Schertz
(doc rcaEM3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--SOIL EROSION--HOW? WHAT? WHY? WHEN?				
Task 1.1--Briefly describe the water (precipitation and irrigation) and wind erosion processes.	**Lander,SCS**	.1		
	Laflen, ARS	.1		
	Hagen, ARS	.1		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Present NRI erosion data and compare/discuss trends using the latest graphic technology. Report NRI wind and water (sheet and rill) erosion by location, land use, tillage practices, etc.	**Lander,SCS**	.3		
	Laflen,ARS	.1		
	Hagen,ARS	.1		
	Herndon,SCS	.3		
	DeGarmo,SCS	.2		
	Smith,SCS	.5		
	Goebel,SCS	.1		
	Maetzold,SCS	.1		
	Geologist,SCS	.1		
	Renard,ARS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.2--Estimate the effects on soil erosion rates, by region, of past and current commodity, conservation and environmental programs and policies, using the NRI, estimated program benefits, EPIC and other erosion prediction models.	**Benson,SCS**	1.0		
	Lewis,SCS	.5		
	Butz,SCS	.3		
	Stevenson,SCS	.3		
	Reinhardt,SCS	.3		
	ASCS	.1		
	ERS	.5		
Task 2.3--Briefly describe the consequences of ephemeral gully erosion. Identify how crops, tillage practices, cropping sequences and conservation practices affect irrigation-induced ephemeral gully erosion. Determine relative importance of ephemeral gully erosion, by region, in estimating total erosion.	**Herndon,SCS**	.2		
	Kearney,SCS	.2		
	Lander,SCS			
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Establish a list of soil properties to describe the soil profiles needed to develop a representative soils data base for soil erosion and water quality analysis for RCA and other policy analyses. Coordinate with **Task 3.5** and economic and process model developments.	**Mausbach,SCS**	1.0		
	Benson,SCS	1.0		
	Maetzold,SCS	1.0		
	Fontenot,SCS	.2		
	Nearing,ARS	.2		
	ERS	.1		
Task 3.2--Using the criteria of **Task 3.1**, refine and update the pedon data base of the Second RCA Appraisal to better assess the impact of soil erosion on soil productivity. Determine the effect of using eroded phases versus uneroded phases in estimating the impact of soil erosion on soil productivity.	**Benson,SCS**	1.0		
	Mausbach,SCS	.5		
	Lander,SCS	.1		
	Maetzold,SCS	.2		
	Bruce,ARS	.1		
	ERS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3--Discuss how WEPP and WEPS improve soil erosion estimation techniques and how they differ from existing techniques (USLE/WEQ). Build on discussion of the erosion methodology presented in the second appraisal report.	**Laflen,ARS**	.5		
	Hagen,ARS	.2		
	Renard,ARS	.1		
	Weesies,SCS	.1		
	Fox,SCS	.1		
	Lander,SCS	.1		
Task 3.4---Discuss the results of using WEPP, RUSLE and the USLE in estimating the rate of soil erosion using the sample county test of the 1992 NRI. Discuss the national implication of this new technology in conservation planning and in estimating sediment delivery to determine impact on water quality.	**Lee,SCS**	.2		
	Miller,SCS	.2		
	Lander,SCS	.1		
	DeGarmo,SCS	.1		
	Lemunyon,SCS	.1		
	Fontenot,SCS	.1		
	Laflen,ARS	.2		
	Weesies,SCS	.2		
	Fox,SCS	.2		
	Kearney,SCS	.1		
	Foster,ARS	.2		
	Renard,ARS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.5--Establish an interdisciplinary, multiagency team to-- o Review the Second RCA Appraisal's findings on erosion's effects on productivity, together with the results of newer studies, to assess what amplification is needed. o Identify conservation cropping sequences for erosion control which can be used in the Third Appraisal Analysis. o Identify other possible cropping systems for erosion control which will be operable in the period 1995-2005. o Identify irrigation erosion cropping sequence or management practices which can be used in the Third RCA Appraisal analysis.	**Mausbach,SCS** Krider,SCS Moore,SCS Lander,SCS Benson,SCS Maetzold,SCS Fontenot,SCS Williams,ARS Carter,ARS ERS	1.0 .5 .5 .2 1.0 1.0 .2 .1 .1 .2		
Task 3.6--Determine the effect of 50, 100, 500, 1,000 years of soil erosion on soil productivity on those soils where a significant impact on productivity is anticipated due to soil loss.	**Benson,SCS** Mausbach,SCS Lander,SCS Maetzold,SCS ARS ERS	1.0 .3 .1 .2 .2 .2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Using soil profile criteria and pedons of **Task 3**, determine the effects of using eroded versus uneroded phases for conservation planning activities and conservation reserve program determinations and on maintaining long-term productivity.	**Benson,SCS**	1.0		
	Mausbach,SCS	.5		
	Lander,SCS	.1		
	Maetzold,SCS	.5		
	Bruce,ARS	.1		
	ERS	.5		
	Butz,SCS	.1		
	Reinhardt,SCS	.1		
Task 4.2--Estimate the effects that various environmental policies, conservation practices, cropping systems, irrigation policies, conservation policies/programs (ACS, FSA, cover crop etc.) have on soil erosion by type (sheet and rill, wind), by crop, land class, soil, etc. by region.	**Benson,SCS**	1.0		
	Reinhardt,SCS	.5		
	Lander,SCS	.1		
	Lee,SCS	.5		
	Herndon,SCS	.1		
	Foster,SCS	.1		
	Maetzold,SCS	.1		
	Fontenot,SCS	.1		
	Hagen,SCS	.2		
	4-NTC Agron,SCS	1.0		
	Mausbach,SCS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Evaluate the effect of alternative erosion control policies on agricultural production and producer returns at various domestic and world levels of demand. This analysis will be coordinated with evaluations of the effect of these policies on soil erosion, water quality, wildlife, crop yield, sediment delivery, pesticide contamination, and nutrient contamination.	**Maetzold,SCS**	2.0		
	Benson,SCS	1.0		
	Atwood,SCS	1.0		
	Lander,SCS	.2		
	Kearney,SCS	.3		
	Burt,SCS	.2		
	Gilbert,SCS	1.0		
	Mausbach,SCS	.5		
	Heimlich,EPA	.2		
Task 5.2--Assess the regional and national effects that proposed conservation, commodity, and environmental programs and regulations will have on erosion by region, and compare results with those of existing programs. Estimate the effect these programs will have on producer returns and production/conservation management practices, using farm level models which address commodity, conservation and environmental programs.	**Maetzold,SCS**	2.0		
	Robertson,SCS	1.0		
	Benson,SCS	1.0		
	Lander,SCS	.2		
	Kearney,SCS	.2		
	Burt,SCS	.1		
	Reinhardt,SCS	.5		
	ERS	.5		
	Kemper,ARS	.5		
	Mausbach,SCS	.5		
	Gilbert,SCS	1.0		
	Heimlich,EPA	.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 5.3--Estimate the effect of long-term soil erosion on U.S. agriculture's capacity to meet world and domestic demand, using global and regional supply and demand models. Use information in **Task 4.1** when investigating alternatives.	**Benson,SCS**	1.0		
	Mausbach,SCS	.5		
	Atwood,SCS	.5		
	ERS	.2		
	Kemper,ARS	.2		
	Heimlich,EPA	.1		
Task 5.4--Using existing data and models, determine how policy or regulation bans on selected herbicides would affect crop choices, cropping sequences, mechanical weed control, and residue management systems, and describe the resulting effects on soil erosion. Likewise, estimate how the offsite and onsite effects of erosion would change because of restrictions on the use of selected herbicides. Coordinate with areas where ground water or surface water quality has been identified as an actual or potential problem as a result of soil erosion.	**Benson,SCS**	1.0		
	Lander,SCS	.2		
	Gilbert,SCS	.5		
	Mausbach,SCS	.2		
	Goss,U.M.	.2		
	Kemper,ARS	.1		
	ERS			
	Heimlich,EPA			

THE THIRD RCA APPRAISAL
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN WILDLIFE AND FISHERY HABITAT MANAGEMENT?--DRAFT DRAFT

Resource Topic Leader: Steve Brady
(doc rcaWFH3, 26 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--WILDLIFE AND FISH HABITAT--WHAT? WHY? HOW? WHEN?				
Task 1.1--Describe how agriculture can protect and enhance wildlife and fish habitat. Explain how agricultural and various conservation practices affect fish habitat, wildlife, and biological diversity.	**Brady,SCS** Kemper/Cooper, ARS FWS Whitworth,EPA	1.0 .1 .1 .1	4/94	5/94
Task 1.2--Describe how total resource management affects fish and wildlife habitat management. Provide guidance to "Resource" coordinator.	**Brady,SCS** Jann,SCS DOI	1.0 .2 .1	4/94	5/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Describe avian diversity by regions (MLRAs) using FWLS BBS data based upon current analysis, studies and publication reviews.				
A. Describe 1982 diversity/dominance and composition	**Brady,SCS**	3.0	8/90	10/90
	Flather,FS	3.0		
	Droege,FWS	.2		
	Inkley,NWLF	.2		
B. Describe 1992 diversity/dominance and composition	**Brady,SCS**	3.0	8/93	10/93
	Flather,FS	3.0		
	Droege,FWS	.2		
	Inkley,NWLF	.2		
C. Describe '82 - '92 changes.	**Brady,SCS**	3.0	10/93	12/93
	Flather,FS	3.0		
	Droege,FWS	.2		
	Inkley,NWLF	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.2--Describe the fishery resources of North Central states by water body type (lake, stream, pond). Relate these resources to the surrounding land use intensity. Other regions may be described in less detail depending on availability of regionally consistent data.	**Brady,SCS** Flather,FS Loftus,SFI Reinetz,FWS	2.0 2.0 .2 .2	12/93	1/94
Task 2.3--Describe federal threatened & endangered (T&E) species whose populations have been jeopardized by pesticides or related contaminants.	**Brady,SCS** FWS	2.0 .1	1/93	3/93
Task 2.4--Describe federal T&E species by frequency/county across the nation with particular emphasis on those impacted by agriculture and related land uses.	**Brady,SCS** Flather,FS FWS	3.0 3.0 .2	6/93	9/93
Task 2.5--Describe changes in abundance and/or harvest of key wildlife species on agricultural lands using current state agency population/harvest data.	**Brady,SCS** Flather,FS	6.0 6.0	1/93	6/93
Task 2.6--Describe habitat condition by region (MLRA) with the habitat structure index:				
A. Using '92 NRI data	**Brady,SCS** Flather,FS	4.0 4.0	1/94	4/94
B. Describe '82 - '92 changes.	**Brady,SCS** Flather,FS NTC,SCS	2.0 2.0 4.0	4/94	6/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
1) Nationally 2) Regionally - group regions by like response (+, -, 0), then do case studies for each category of response.				
Task 2.7--Describe habitat conditions for key species by using descriptive NRI data or by using habitat models/filters with '92 NRI data.	**Brady,SCS**	3.0	7/94	10/94
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Estimate the biodiversity impact on fish and wildlife caused by agricultural pesticide use.	**Brady,SCS** Whitworth,EPA FWS	3.0 .2 .2	1/93	4/93
Task 3.2--Investigate the development of models which assess how agricultural pesticide use affects avian community structure, composition, and diversity.	**Brady,SCS** Flather,FS Whitworth,EPA ERS SPA,SCS	3.0 3.0 1.0 1.0 1.0	3/93	4/93
Task 3.3--Estimate the biodiversity impact on fish and wildlife caused by agriculturally applied nutrients.	**Brady,SCS** Cooper,ARS ASCS	1.0 .2	12/91	12/92
Task 3.4--Investigate the development of models which describe how agriculturally applied nutrients affect avian community structure, composition, and biodiversity.	**Brady,SCS** Flather,FS ERS Whitworth,EPA Cooper,ARS	2.0 2.0 .2 .2 .1	6/91	8/91

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.5--Develop habitat models/filters to quantify habitat quality for selected species of interest.	**Brady,SCS**	12.0	12/90	12/91
	Flather,FS	12.0		
	ERS	1.0		
	Whitworth,EPA	1.0		
Task 3.6--Report how wildlife management has been integrated into multiple resource use farm/ranch programs. Use existing case studies or propose new studies where needed.	**NTC Biol/SCS**	4.0	12/93	3/94
	Brady,SCS	1.0		
	Jann,SCS	1.0		
	ERS			
	Whitworth,EPA			
Task 3.7--Describe regional trends in biodiversity as well as high profile species such as T&E, rare or high dollar-value species.	**Brady,SCS**	1.0	6/94	7/94
	Flather,FS	1.0		
TASK 4--ALTERNATIVE SOLUTIONS.				
Task 4.1--Relate BBS avian biodiversity data (**Task 2.1** above) to habitat structure (HSI) (**Tasks 2.6 & 2.7**) and to major land use and management practices. Describe significant trends and unique situations in more detail.	**Brady,SCS**	6.0	4/94	10/94
	Flather,FS	6.0		
	FWS	.2		
	ERS	.1		
Task 4.2--Identify resource use changes (i.e. CRP, tillage types, etc.) which affect the resource base or which appear to impact wildlife populations. Discuss alternative practices which mitigate negative impacts or further support positive impacts.	**Brady,SCS**	1.0	11/94	12/94
	SPA,SCS	1.0		
	ERS	.5		
	Whitworth,EPA	.1		
	ASCS			

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.3--Define avian community characteristics by integrating the relationships identified in **Tasks 3.2 & 3.4** with the habitat structure index. Determine if the contributions of habitat, pesticides and nutrients can be quantified.	**Brady,SCS**	2.0	8/94	10/94
	Flather,FS	2.0		
	ASCS	.2		
	Cooper,ARS	.1		
	FWS	.2		
Task 4.4--Relate fisheries data (**Task 2.2**) to water quality/quantity data, land use descriptions, erosion rates, pollutant loadings, etc. as data/projections become available from other analysts, EPA, NRI, etc.	**Brady,SCS**	2.0	5/94	7/94
	SPA	.5		
	Whitworth,EPA	.5		
	FWS	.5		
	ERS	.5		
Task 4.5--Describe changes in the habitat structure index which occur from proposed total resource management and relate them to biodiversity.	**Brady,SCS**	2.0	7/94	9/94
	Jann,SCS	.5		
	Flather,FS	2.0		
	ASCS	.2		
Task 4.6--Describe changes to species-specific habitat which result from total resource management alternatives through filters/models (**Task 2.7**) .	**Brady,SCS**	1.0	9/94	10/94
	Jann,SCS	.5		
	ASCS	.1		
	ERS	.1		
	CES	.1		
	SPA,SCS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Project future wildlife response to natural resource conditions for mid (10-15 year) and long-range (2040) targets, using current and recent historical trends as baselines.				
A. Project changes in biodiversity (and general wildlife response) by using the habitat structure index as influenced by projected land use/management conditions.	**Brady,SCS** Flather,FS SPA,SCS FWS Whitworth,EPA	1.0 1.0 .2 .1	1/95	2/95
B. Project changes in avian biodiversity by using the BBS/HSI model developed in **Task 4.1**.	**Brady,SCS** Flather,FS FWS SPA,SCS	1.0 1.0 .2 .2	2/95	3/95
C. Project changes in key species by using the models developed in **Task 3.5**.	**Brady,SCS** SPA FWS	1.0 .1 .2	2/95	3/95
D. Describe changes in T&E species qualitatively.	**Brady,SCS** FWS	1.0 .1	1/94	2/94
E. Project changes in fishery resources qualitatively.	**Brady,SCS** Flather,FS SPA,SCS FWS	1.0 1.0 .2 .1	7/94	8/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 5.2--Project future wildlife response to changing land management activities, alternative USDA programs and treatments, using the models developed above with SPA projections.	**Brady,SCS**	2.0	1/95	3/95
	Flather,FS	2.0		
	SPA,SCS	.2		
	F&WS	.2		
	Whitworth,EPA	.2		

THIRD RCA APPRAISAL
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN WETLANDS AND RIPARIAN AREAS MANAGEMENT--DRAFT DRAFT
Resource Topic Leader: Steve Brady
(doc rcaWER3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--WETLANDS AND RIPARIAN DEFINITIONS -- WHAT? HOW? WHY? WHEN?				
Task 1.1--Report the role, occurrence, and significance of wetland areas in maintaining environmental quality and biodiversity. Explain the importance of wetlands in maintaining, improving or degrading water quality. Explain the effects of wetlands in supporting wildlife and fisheries.	**Brady,SCS** FWS Heimlich,EPA FS COE ASCS	1.0 .1 .1 .1 .1 .1	12/93	1/94
Task 1.2--Report the role, general occurrence, and significance of riparian areas in maintaining environmental quality and biodiversity. Explain the importance of riparian areas in maintaining, improving or degrading water quality. Explain the effects of riparian areas on wildlife and fish.	**Brady,SCS** FWS Heimlich,EPA FS COE ASCS	1.0 .1 .1 .1 .1 .1	12/93	1/94
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Analyze the '82, '87, & '92 NRI data on wetlands. Identify changes in land use since 1982 on a regional and national basis. Results will be reported and used with other modeling and analytical efforts for the appraisal.	**Brady,SCS** Flather,FS SPA,SCS	1.0 1.0 .2	10/93	11/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.2--Analyze FWS wetland data and summary reports to identify wetland trends and issues such as wetland losses due to land use conversions or wetland restorations. National and regional patterns will be described and evaluated.	**Brady,SCS** Flather,FS Dahl,FWS CPA,SCS Heimlich,EPA	2.0 2.0 .5 .1 .1	4/91	6/91
Task 2.3--Describe the effect of the Wetland Conservation provision of the 1985 FSA and 1990 FACTA. Report the impact it has on changes in land management and conservation, and relate it to wildlife and fisheries.	**Brady,SCS** FWS CPA,SCS Heimlich,EPA SPA,SCS	1.0 .2 .1 .1 .1	4/94	5/94
Task 2.4--Evaluate '92 NRI riparian data to determine if they will be useful in analysis. Regional patterns will be described if the data permit. Results will be related to wildlife and fish and will be communicated to the Water Quality resource team..	**Brady,SCS** FWS CPA,SCS Heimlich,EPA RID,SCS	1.0 .2 .1 .1 .2	3/94	4/94
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Investigate the possibility of using '92 NRI data on riparian areas for regional and national summaries of resource condition.	**Brady,SCS** RID,SCS	1.0 .1	3/94	4/94
Task 3.2--Report the findings of the USDA and the Soil and Water Conservation Society and others on the effect Swampbuster may have had on water quality, erosion and sediment control and wildlife habitat.	**Brady,SCS** Burt,SCS Gilbert,SCS Moore,SCS Heimlich,EPA Lowrance,ARS ERS	1.0 .2 .1 .1 .1 .1 .1	10/93	11/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3--Analyze the NRI data and identify which data elements are needed to perform policy analysis and program development.	**Brady,SCS**	1.0	12/94	1/95
	RID,SCS	.1		
Task 3.4--Analyze the effect sediment has on restoring, enhancing or degrading wetlands or riparian areas.	**Louisiana SO**	2.0		
	Brady,SCS	.5		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Query the SCS state biologists to determine if state level data on wetlands and riparian areas are available to supplement NRI data. Assess the quality of each state's data and determine if aggregation of the data is feasible for regional and/or national analysis.	**Brady,SCS**	3.0	3/93	6/93
	NTC Biol	4.0		
	FWS	.1		
	Heimlich,EPA	.1		
	COE	.1		
Task 4.2--Describe wetland restoration projects that have been successfully accomplished. Also, analyze those that have not been successful and identify reasons they did not achieve the goals established in the original plans.	**Gray,SCS**	3.0	10/93	1/94
	NTC Biol	4.0		
	FWS	.1		
	Heimlich,EPA	.1		
	COE	.1		
	ERS	?		
Task 4.3--Evaluate and describe the causes of the observed changes to wetland and riparian systems. Discuss the opportunities of national agricultural policy to enhance or mitigate the effects of those changes.	**Brady,SCS**	2.0	6/94	8/94
	Lowrance,ARS	.1		
	ERS	.1		
	SPA,SCS	.1		
	ASCS	.1		
	Heimlich,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Assess the impact of alternative and future policy scenarios on the wetland and riparian systems described above. Work closely with other analysts in developing the input data for alternative scenarios and analyzing the results.	**Brady,SCS** SPA,SCS Heimlich,EPA Kemper,ARS	4.0 .5	6/94	10/94

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN AGRICULTURAL WATER MANAGEMENT?--DRAFT DRAFT
Resource Topic Leader: Don von Wolffradt
(doc rcaWSD3, 25 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--AGRICULTURAL WATER USES - WHAT? HOW? WHY? WHEN?				
Task 1.1--Identify the agricultural uses of surface and ground water: irrigation, water requirements for farm animals, and other on-farm/ranch water needs. (Historical data will be collected as part of HUMUS contract.)	**von Wolffradt, SCS**	1.0	10/92	9/93
	Frost,SCS	1.0		
	Walker,SCS	2.0		
	FS	.5		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Use models to estimate historical agricultural surface and ground water use and current conditions.	**von Wolffradt, SCS**	1.5	10/92	9/93
	Frost,SCS	2.0		
	USGS	.5		
Task 2.2--Make projections of future agricultural surface and ground water needs with various agriculture and trading policy assumptions.	**von Wolffradt, SCS**	1.5	10/92	9/93
	Frost,SCS	2.0		
	ERS			

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Historical data will come from the "Second National Water Assessment," Water Resources Council, 1975; streamflow and water use data collected by the U.S. Geological Survey; SCS SNOTEL; 1989 Forest Service RPA Report; SCS NRI Survey; Census of Agriculture; updated crop water coefficients for 10 commodities, and other sources of data.	**von Wolffradt, SCS** Frost,SCS Walker,SCS FS USGS NASS	1.0 1.5 1.0	10/92	9/93
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Determine the impact of droughts on agricultural water use. Droughts stress water supplies and cause the public to reevaluate the priorities of water use. Include evaluation of drainage.	**von Wolffradt, SCS** Frost,SCS Carmack,SCS FS ERS COE USGS	0.5 1.0 0.5 .2 .2 .2 .2	10/93	9/94
Task 4.2--Improve irrigation water use efficiency and effectiveness, focusing on water conservation. Improved efficiency is needed to reduce the amount of agricultural water use and make more available for others.	**Carmack,SCS** Frost,SCS ARS	1.0 1.0 1.0	10/93	9/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.3--Evaluate the effects of erosion on. irrigated land. Irrigation when not applied properly causes severe erosion around the water facilities, causing loss of the resource base.	**Herndon,SCS**	0.5	10/93	9/94
	Frost,SCS	1.0		
Task 4.4--Assess the need to maintain and increase, where possible, agricultural surface and ground water supplies. Maintenance of existing water supplies is needed to assure future sources of agricultural water.	**von Wolffradt, SCS**	1.0	10/93	9/94
	Frost,SCS	1.0		
	FS	.5		
	BOR	.5		
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Evaluate agricultural water use with institutional policies and laws affecting surface and ground water quantity.	**Otte,SCS**	0.5	10/94	9/95
	Robertson,SCS	0.5		
	Frost,SCS	1.0		
	FS	.5		
	ERS	.5		
Task 5.2--Analyze the effects of proposed legislation on agricultural water quantity uses.	**von Wolffradt, SCS**	0.5	10/93	9/94
	Frost,SCS	1.0		

Third RCA Appraisal Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN GRAZING LANDS MANAGEMENT--DRAFT DRAFT

Resource Topic Leader: Harlan DeGarmo
(doc rcaGRZ3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--GRAZING LANDS MANAGEMENT--WHAT? HOW? WHY?				
Task 1.1--Describe all non-Federal grazing lands of the U.S. (Land uses include; rangelands, pasturelands, native pasturelands, grazed woodlands, and haylands.) Express their importance in general from a biological, economic, environmental, and social point of view. Indicate in general the role of non-Federal grazing lands in the production of food and fiber, water resources, air quality basins, aesthetics, wildlife habitat, recreation and non-traditional alternative uses.	**DeGarmo,SCS** NTC Range Cons. McCawley,ES Child,ARS Hall,ASCS Rumburg,CSRS Williamson,FS Heimlich,EPA	1.0 4.0 .5 .5 .5 .5 .5 .1		
Task 1.2--Indicate the extent of non-Federal grazing lands in acres and percent of land cover, presently in the above-listed various land uses.	**DeGarmo,SCS** NTC Range Cons. Goebel,SCS Williamson,FS Heimlich,EPA	1.0 4.0 .5 .5 .5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Indicate the health and/or condition status of each non-Federal grazing land category.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	4.0		
	RID	.5		
	Williamson,FS	.2		
	Heimlich,EPA	.1		
Task 2.2--Present trends in erosion by water and wind of each non-Federal grazing land category based upon the 1977-92 NRI data sets.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	4.0		
	RID	.5		
	Williamson,FS	.2		
	Heimlich,EPA	.1		
Task 2.3--Present the trend and the status of woody species invasion on rangelands and other non-Federal grazing lands where data is available by region. Use NRI, special studies and other information to analyze the trend.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	4.0		
	RID	1.0		
	Williamson,FS	.2		
	Heimlich,EPA	.1		
Task 2.4--Present the status and trend of noxious weed invasion on each non-Federal grazing land category where data is available by region. Use NRI, special studies and other information to analyze the trend.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	.5		
	RID	.5		
	McCawley,ES	.5		
	Child,ARS	.5		
	Rumburg,CSRS	.5		
	Williamson,FS	.5		
	Heimlich,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--CURRENT MANAGEMENT APPLICATIONS, RESPONSES AND CONCERNS				
Task 3.1--Present the level of management presently being applied on non-Federal grazing lands such as continuous overgrazing, continuous proper grazing, and rotational grazing systems by region.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	4.0		
	McCawley,ES	.5		
	Child,ARS	.5		
	Rumburg,CSRS	.5		
	SRM	18.0		
	AF&GC	18.0		
	Williamson,FS	.5		
	Heimlich,EPA	.1		
Task 3.2--Present the conservation treatment needs as identified by the 1992 NRI concerning non-Federal grazing lands.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	3.0		
	RID	.5		
	Williamson,FS	.1		
	Heimlich,EPA	.1		
Task 3.3--Present the hydrological characteristics of well managed rangeland sites and poorly managed rangeland sites of similar kind to determine the quantitative effects on water quality and quantity. Include sites associated with riparian and wetlands areas.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	3.0		
	Blackburn,ARS	6.0		
	Thurow,TAES	12.0		
	Williamson,FS	.5		
	Heimlich,EPA	.1		
Task 3.4--Document the impacts on non-Federal grazing lands from wildlife populations that have increased in numbers beyond their carrying capacity by region. Gather data through case studies and special studies.	**Butler,SCS**	6.0		
	Huber,SCS	4.0		
	Williamson,FS	1.0		
	FWLS	1.0		
	BLM	1.0		
	Williamson,FS	1.0		
	Heimlich,EPA	.1		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.5--Estimate the economic conditions necessary to provide the stimulus for the private sector to improve non-Federal grazing land conditions through better management techniques and practice application.	**Butler,SCS**	4.0		
	Krupa,ERS	2.0		
	Butz,SCS	.5		
	Williamson,FS	.1		
	Heimlich,EPA	.1		
TASK 4--POLICY AND PROGRAM IMPLICATIONS				
Task 4.1--Determine the effects of the 1985 and 1990 farm bills on non-Federal grazing land health and condition, i.e., CRP, riparian, wetlands, stewardship incentive program, etc.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	4.0		
	Butz,SCS	1.0		
	McCawley,ES	6.0		
	Child,ARS	.5		
	Hall,ASCS	6.0		
	Rumburg,CSRS	1.0		
	Williamson,FS	1.0		
	Heimlich,EPA	.1		
Task 4.2--Estimate future trends in the conversion of rangeland and pastureland to cropland uses and the conversion of any non-Federal grazing land to nonagricultural uses by region. Coordinate this activity with the RPA Assessment.	**Krupa,ERS**	2.0		
	Smith,SCS	2.0		
	DeGarmo,SCS	.2		
	Butz,SCS	.2		
	McCawley,ES	.2		
	Child,ARS	.1		
	Hall,ASCS	.2		
	Rumburg,CSRS	.2		
	Williamson,FS	.2		
	Heimlich,EPA	1.0		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.3--Assess the impact of the current and future trends concerning noxious weeds on non-Federal grazing lands as it affects soil, water, air, plant and animal resources.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	3.0		
	Butz,SCS	1.0		
	McCawley,ES	1.0		
	Child,ARS	1.0		
	Hall,ASCS	1.0		
	Rumburg,CSRS	1.0		
	Williamson,FS	1.0		
	Contractor	2.0		
	Heimlich,EPA	.1		
Task 4.4--Assess the impact of the current and future trends concerning woody species encroachment on non-Federal grazing lands as it affects soil, water, air, plant and animal resources.	**DeGarmo,SCS**	1.0		
	NTC Range Cons.	3.0		
	Butz,SCS	1.0		
	McCawley,ES	1.0		
	Johnson,ARS	1.0		
	Hall,ASCS	1.0		
	Rumburg,CSRS	1.0		
	Williamson,FS	1.0		
	Contractor	2.0		
	Heimlich,EPA	.1		
Task 4.5--Estimate future trends and conflicts concerning wildlife and livestock interaction on non-Federal grazing lands. Examine the effect of alternative policies on wildlife population, livestock production, grazing conditions, etc.	**Butler,SCS**	1.0		
	Huber,SCS	3.0		
	DeGarmo,SCS	1.0		
	NTC Range Cons.	1.0		
	Butz,SCS	1.0		
	McCawley,ES	1.0		
	Child,ARS	1.0		
	Hall,ASCS	1.0		
	Rumburg,CSRS	6.0		
	Williamson,FS	6.0		
	Heimlich,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.6--Analyze the effect of alternative scenarios on non-Federal grazing land conditions and trends.	**DeGarmo,SCS**	2.1		
	NTC Range Cons.	2.0		
	Butz,SCS	.2		
	McCawley,ES	.2		
	Child,ARS	.2		
	Hall,ASCS	.2		
	Rumburg,CSRS	.2		
	Williamson,FS	.2		
	Heimlich,EPA	.2		
	SPA	.5		

THE THIRD RCA APPRAISAL
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN WOODLAND MANAGEMENT--DRAFT DRAFT
Resource Topic Leader: Terry Johnson
(doc rcaFWM3, 26 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--FOREST LAND -- WHAT? WHERE? WHY? HOW?				
Task 1.1--Describe the role of privately owned forest land or woodlands in meeting national timber needs, enhancing water quality, and providing habitat for wildlife. Identify how most privately owned woodlands are managed.	**Johnson,SCS** Moulton,FS Peterson,EPA	2.0 2.0 .1	6/92	12/95
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Report private woodland production trends based upon RPA's findings. Utilize the NRI statistics on privately owned woodland acres and production.	**Moulton,FS** Johnson,SCS Heissenbuttel, AFC Peterson,EPA	1.0 1.0 0.5 .1	6/92	12/95
Task 2.2--Assess current status of capital gains tax and federal and state legislation on promoting increased production on privately owned woodlands. Inventory and compare federal and state laws. Determine which laws are most favorable for promoting private woodland production and environmental benefits.	**Argow,NWOA** (Contract) Johnson,SCS Liu,FS Peterson,EPA	6.0 .5 .1 .1	6/92	12/92

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Define the role of "agroforestry" (deliberate growing of woody perennials with agricultural crops and/or animals) in the management of sustainable natural resources (pasture, forest, cropland). Show how this is (and can be) used in the regional management of privately owned woodlands and the effect on production.	**Hardesty,WSU** Townsend,SCS Windbreak Forester,SCS Robinson,SCS Johnson,SCS Peterson,EPA	3.0 .5 .5 .5 1.0 .1	6/92	12/93
Task 3.2--Estimate the impact tree planting and thinning management practices would have on the future production from existing woodlands with the use of existing or proposed case studies.	**Johnson,SCS** Townsend,SCS Robinson,SCS Ticknor,SCS Byles,ES Post,CSRS Moulton,FS Peterson,EPA	1.0 1.0 1.0 1.0 .5 .5 1.0 .1	6/92	12/94
Task 3.3--Identify the agroforestry ecological basis in the management of crop production, stable economic returns and sustainable use. Describe the role of trees in the absorption of nutrients, heavy metals and other toxicants, etc. Determine the effectiveness of trees as a benefit to agriculture and water quality.	**Johnson,SCS** Windbreak Forester,SCS Ticknor,SCS Peterson,EPA	2.0 1.0 1.0 .1	6/92	12/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS	**Moulton,FS**	1.0	6/92	12/95
	Johnson,SCS	1.0		
Task 4.1--Make a comparative analysis of a managed vs. unmanaged forest on a regional basis. Estimate the effect of thinning to increase national production. Show changes in volume over the next 50 years. Use the information in **Task 3.2**.	ES	.5		
	CSRS	.5		
	AFC	1.0		
	Peterson,EPA	.1		
Task 4.2--Assess the role and opportunities of woodlands in multiple use of resources by region. Consider agroforestry definition. Coordinate with "Total Resource Management" resource topic leader.	**Post,CSRS**	1.0	6/92	12/94
	Jann,SCS	.2		
	Moulton,FS	.2		
	AFC	.1		
	Peterson,EPA	.1		
Task 4.3--Develop and assess alternative marketing plans to promote agroforestry on privately owned lands. Describe alternative technology transfer planning processes which can be used to assist landowners to incorporate trees (agroforestry) into the holistic sustainable farm management plan.	**Contractor**	8.0	6/92	12/95
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Assess the effect of proposed changes in federal and state capital gains tax on promoting increased production on privately owned woodlands.	**Argow,NWOA**	1.0	6/92	12/93
	Johnson,SCS	.1		
	Moulton,FS	.1		
	Peterson,EPA	.1		

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST TO IMPROVE WATER QUALITY THROUGH AGRICULTURAL MANAGEMENT--DRAFT DRAFT
Resource Topic Leader: Peter Patterson
(doc rcaWQM3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--WATER QUALITY AND AGRICULTURAL PRODUCTION --WHAT? WHY? HOW? WHEN?				
Task 1.1--Define water quality, addressing its relationship to various types of water uses. Define the difference between a water quality improvement and a water quality benefit. Describe the relationships between agricultural production and water quality and nonagricultural uses and water quality. Identify how water quality may be measured and how it applies to agriculture.	**Patterson,SCS** Kuch,EPA USGS McCleese,FS USDA Task Force	.1 .1 .1 .1 .1	10/92	11/92
Task 1.2--Describe how changes in agriculture practices affect point and nonpoint source (NSP) contributions to water quality degradation or improvement. Describe the difference in analyzing the benefits resulting from the improvements in water quality as agricultural practices and land use change. Describe potential conflicts induced by a practice change aimed at reducing pollutant loading to "bottom of the root zone" or "edge of the field."	**Patterson,SCS** ERS Bucks,ARS Kuch,EPA USGS McCleese,FS	.5 .1 .1 .1 .1 .1	10/92	12/92

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 1.3--Describe the approach to be taken in meeting water quality loadings criteria. Describe how agricultural management systems relate to loading standards.	**Burt,SCS**	1.0		
	Kuch,EPA	.5		
	Bucks,ARS	.5		
	Thicke,ES	.5		
	McCleese,FS	.1		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Identify areas where surface and ground water are potentially vulnerable to impairment due to agricultural and nonagricultural practices. Rank these areas as to high, medium, and low potential for degradation in water quality. Show how each nonpoint source contributes to the changes in water quality by region from pesticide, nutrients, sediment, animal waste, and salinity and nonagricultural pollutant sources (i.e. construction, highways, streets etc).	**Moore,SCS**	6.0		
	Arnold,SCS	6.0		
	Schertz,SCS	6.0		
	Schnieder,USGS	6.0		
	Onstad,ARS	.5		
	GIS,SCS	1.0		
	Owens,SCS	3.0		
	Kuch,EPA	1.0		
	Thicke,ES	.5		
Task 2.2--Identify the status and trends of those areas where water quality has been affected by agricultural practices. Present results by region for pesticide, nutrients, sediment, salinity, animal waste, etc. (use existing state and Federal studies).Report the results of the demonstration projects (DP) and hydrologic unit area (HUA) projects as changes in agricultural practices improve or protect water quality. Present the effects on the onsite and offsite environment of changes in timing, amounts, and application method of nutrients. Estimate pollutant loadings in these projects with simulation model runs used in the study.	**Patterson,SCS**	6.0	1/93	11/93
	Moore,SCS	1.0		
	Krider,SCS	1.0		
	Sutton,SCS	1.0		
	Benson,SCS	3.0		
	Gilbert,SCS	2.0		
	Owens,SCS	.5		
	ERS	1.0		
	Onstad,ARS	1.0		
	Kuch,EPA	1.0		
	Thicke,ES	1.0		
	USDA Task Force	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.3--Show how physical conditions (weather, terrain, etc.), biological conditions, commodity policies, conservation policies, education and technical assistance policies, trade policies, research policies etc. contribute to changes in water quality. Identify regional changes and trends. Prepare a descriptive report of the trends in water quality and what causes these changes for general public consumption.	**Sutton,SCS**	12.0		
	Patterson,SCS	.5		
	Moore,SCS	.5		
	Fontenot,SCS	.5		
	Schertz,SCS	.5		
	Schnieder,USGS	.5		
	Kuch,EPA	1.0		
	ERS	1.0		
	Thicke,ES	1.0		
	Onstad,ARS	2.0		
	OBPA	.5		
	McCleese,FS	.5		
Task 2.4--Report the major accomplishments in (1) education, technical and financial assistance, (2) data base assessment, area studies and evaluations, and (3) research of ARS (MESA), CSRS, etc.	**Patterson,SCS**	1.0	11/93	1/94
	ES	.1		
	ERS	.1		
	NASS	.1		
	ASCS	.1		
Task 2.5--Identify Federal, state and local policies and regulations which affect water quality. Make a comparative analysis of the various policies. Coordinate with information gathered in the pesticide, nutrient, erosion, salinity and sediment topic areas, but present results from a water quality perspective.	**Fontenot,SCS**	4.0		
	Gilbert,SCS	.2		
	Schertz,SCS	.1		
	Waggoner,SCS	.1		
	Kuch,EPA	.2		
	McCleese,FS	.1		
Task 2.7--Report on the status of 319 state management plans to deal with nonpoint source pollution and compare their features and relative stages of implementation. Assess progress, by state, in reducing NPS pollution.	**SCS**	6.0	1/93	11/93
	Kuch,EPA	3.0		
	State Agencies	12.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.8--Report other data sources such as "Drinking Water Survey" and analyze the information and its implications for agricultural production practices.	**Gilbert,SCS**	1.0		
	Kuch,EPA	.5		
	USGS	.5		
	Bucks,ARS	.5		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Assemble an interdisciplinary and interagency team to develop the modeling and analysis process to complete the Third RCA Appraisal. Design and use an evaluation system to tie together the overall water quality changes (improvements or degradations) brought about by management practices used on pesticides, nutrients, erosion-produced sediment, animal waste, and salinity. Adapt existing or newly designed biological, physical and economic models into a farm-regional-national system to analyze regional and national water quality and economic impacts of alternative agricultural production systems, conservation systems, and agricultural policies. Determine the onsite and offsite environmental and economic impacts of these crop and livestock systems. Utilize GIS for analysis and presentation of results as appropriate. Coordinate this activity with the pesticide, nutrient, erosion, sediment, and salinity resource topic areas and RCA integrated commodity, conservation, and environmental model development process.	**Sutton,SCS**	6.0		
	Fontenot,SCS	2.0		
	Patterson,SCS	2.0		
	GIS,SCS	1.0		
	RID,SCS	.2		
	Bucks,ARS	1.0		
	USGS	1.0		
	Kuch,EPA	1.0		
	McCleese,FS	1.0		
	USDA Task Force	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Develop a process to assess how agriculture activities affect pollutant loadings and evaluate alternative systems for the onsite analysis. Develop a screening process to identify current or potential water quality conditions with models such as NLEAP and NPURGE, before proceeding with an evaluatory analysis with models such as ROTO, SWURRB, AGNPS etc and onsite models such as EPIC.	**Sutton,SCS**	3.0		
	Fontenot,SCS	1.0		
	Patterson,SCS	1.0		
	Owens,SCS	1.0		
	Woodward,SCS	1.0		
	GIS,SCS	.5		
	RID,SCS	.2		
	Follett,ARS	1.0		
	USGS	1.0		
	Kuch,EPA	1.0		
	McCleese,FS	1.0		
Task 3.3--Coordinate all technical methods development and data collection activity with the GIS data base system of SCS. Present results of all analysis in a GIS data base format.	**Fontenot,SCS**	1.0		
	TeSelle,SCS	1.0		
	USDA Task Force	.1		
Task 3.4--Identify by region what water quality improvement practices best achieve the Water Quality Initiative's goal: to conserve, protect and enhance the natural resource base.	**Sutton,SCS**	2.0		
	Patterson,SCS	2.0		
	Bucks,ARS	.2		
	ES	.2		
	Kuch,EPA	.2		
	USDA Task Force	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Formulate water quality "targeting" criteria, as all parcels of land are not created or treated as equal. Using an interdisciplinary and interagency team, develop the criteria and determine how they will be used in analyzing alternative integrated crop management systems to improve, protect and enhance the environment. Coordinate this activity with integrated RCA model development, especially in the resource topic areas of pesticides, nutrients, erosion, and sediment.	**Sutton,SCS**	2.0		
	Owens,SCS	2.0		
	Patterson,SCS	2.0		
	Fontenot,SCS	2.0		
	Kuch,EPA	1.0		
	USGS	1.0		
	Bucks,ARS	1.0		
	ERS	.5		
	ES	.2		
	McCleese,FS	.2		
	USDA Task Force	.1		
Task 4.2--Analyze alternative water quality targeting policies under given alternative RCA scenarios. Utilize these results to determine which targeting policies and criteria are the most (1) physically effective and (2) economically efficient in reaching a designated water quality goal for the alternative scenarios.	**Sutton,SCS**	2.0		
	Owens,SCS	2.0		
	Patterson,SCS	2.0		
	Fontenot,SCS	2.0		
	EPA	1.0		
	USGS	1.0		
	Bucks,ARS	1.0		
	ERS	.5		
	ES	.2		
	McCleese,FS	.2		
	USDA Task Force	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Assess the effects and tradeoffs of commodity, conservation, environmental, and trade policies on water quality. Utilize the demonstration and HUA projects and **Task 3** information to formulate the scenarios.	**Sutton,SCS** USDA Task Force	4.0 .1		
Task 5.2--Assess the effects that various water quality targeting policies have on (1) agriculture productive capacity, (2) location of production and (3) producer returns.	**Sutton,SCS** USDA Task Force	4.0 .1		

Third RCA Appraisal
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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN AGRICULTURAL MANAGEMENT TO ACHIEVE A SUSTAINABLE SYSTEM/ENVIRONMENT?--DRAFT DRAFT

Resource Topic Leader: Marc Safley
(doc rcaSUA3, 25 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--SUSTAINABLE AGRICULTURE/ENVIRONMENT--WHAT? WHY? HOW? WHEN?				
Task 1.1--Describe the sustainable agriculture approach and philosophy in agricultural production and environmental sustainability.	**Safley,SCS**	.5		
	O'Connell,CSRS	.5		
	Manale,EPA	.1		
Task 1.2--Describe the role of sustainability in the production of food, fiber, and fuel, and the protection of rural communities and landscape.	**Safley,SCS**	.5		
	Bushnell,ES	.5		
	Hubbard,ES	.5		
	Reinhardt,SCS	.5		
	Tuttle,SCS	.5		
	O'Connell,CSRS	.5		
	Manale,EPA	.2		
Task 1.3--Identify the criteria and components for sustainability. Present how sustainable agriculture is being implemented by the different Federal, state and private agencies.	**Safley,SCS**	.5		
	O'Connell,CSRS	.5		
	Bushnell,ES	.5		
	Schaller,IAA	.5		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Identify the sustainable agriculture systems developed over the past 20 years and describe how the components have changed. Identify the forces which contributed to the use and nonuse of these systems.	**Herndon,SCS**	.5		
	Lawrence,SCS	.5		
	Root,SCS	.5		
	Parr,& Kemper,ARS	.5		
	Manale,EPA	.5		
	CSRS	.5		
Task 2.2--Present the trends in the use of sustainable systems in agriculture over the past 3 decades.	**Herndon,SCS**	.5		
	Lawrence,SCS	.5		
	Root,SCS	.2		
	Parr,& Kemper,ARS	.1		
	CSRS	.1		
Task 2.3--Identify the percent of farmers using sustainable components in agricultural production practices, by farm type. Use the work of the regional LISA councils to describe the sustainable agricultural practices being applied today.	**Clearfield,SCS**	.5		
	Flora,VPI	.5		
	Butler,ISU	.5		
	State Soc,ES	3.0		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Describe the role of organic matter in soils and its inherent contribution to the biological and chemical state of soil productivity and quality. Coordinate with the Soil Tilth Lab. Determine how changes in organic matter affect the health of the soil and biological community. Coordinate with the Soil Erosion topic.	**Mausbach,SCS**	2.0		
	Lander,SCS	.5		
	Doran,ARS	.5		
	CSRS	.2		
	Manale,EPA	.1		
Task 3.2--Show the relationship of sustainability to soil as a composting medium for recycling animal waste, sludge and urban organic matter. Identify soil sustainability by region and locale to determine effect on soil quality.	**Mausbach,SCS**	2.0		
	Lander,SCS	.5		
	Krider,SCS	2.0		
	Parr,& Kemper,ARS	1.0		
	CSRS	.5		
	Manale,EPA	.1		
Task 3.3--Initiate studies to explore the opportunities of composting agricultural and municipal wastes and cover crops, etc. to replace manufactured nutrient inputs. Assess the effect each has on the environment. Current ARS and CSRS research efforts will provide some basic data for regional and national assessment.	**Krider,SCS**	2.0		
	Lander,SCS	.5		
	Safley,SCS	.2		
	Parr,& Kemper,ARS	1.0		
	CSRS	.5		
	Manale,EPA	.1		
Task 3.4--Evaluate the influence a sustainable agriculture system has upon a sustainable agriculture community, landscape and rural stability. Show how sustainability in rural life is an interrelated economic, sociological and environmental structure.	**Clearfield,SCS**	2.0		
	Tuttle,SCS	.5		
	Chuang,SCS	.2		
	ERS	1.0		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.5--Describe what is involved in the holistic IRM systems planning approach to farm management. Compare this approach to CRP conservation planning, ICM and water quality planning.	**Reinhardt,SCS**	.5		
	Carr,SCS	.2		
	Jernstedt,SCS	.2		
	Denley,ASCS	.1		
	Smith,SCS	.1		
	Manale,EPA	.1		
Task 3.6--Identify the components of several sustainable agricultural systems. Determine how to measure the effect different levels of sustainable agriculture have upon the various resources of the environment. Show how these components of sustainable agriculture systems are determined by the inherent capacity and gaps of technology and the resource base. Report how these components change by production region.	**Bushnell,SCS**	2.0		
	Dyer,SCS	.5		
	Argabright,SCS	.5		
	Parr,& Kemper,ARS	2.5		
	Manale,EPA	.1		
	CSRS	.1		
Task 3.7--Analyze the temporal and physical aspects of the input components such as the substitution of land, labor, capital and technology as related to sustainable agriculture. Project the role of technological developments of plants, animals, production and quality in sustainable agriculture systems.	**Chuang,SCS**	2.0		
	Lawrence,SCS	.5		
	Parr,& Kemper,ARS	.1		
	Manale,EPA	.1		
	CSRS	.4		
	ES	.1		
	ERS	.1		
Task 3.8--Collect case study information of sustainable agricultural production systems. Report on the managerial, ecological and economic aspects of each study.	**Bushnell,SCS**	2.0		
	O'Connell,CSRS	1.0		
	Safley,SCS	1.0		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.9--Report on the research findings on the implementation of sustainable agriculture systems. Evaluate the economic, sociological and environmental feasibility and applicability of the general adoption of these systems for agriculture by region.	**Clearfield,SCS**	2.0		
	Lawrence,SCS	.5		
	Regional,SCS	2.0		
	Sutton,SCS	1.0		
	ES	.5		
	ERS	.5		
	Manale,EPA	.1		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Utilizing the information developed in **Task 3**, identify sustainable agricultural production components to be analyzed. Consider changes in pesticide use, crop rotation, IPM, ICM, new crops, etc. Provide support to the SPA model development and other modelers to complete a comparative analysis of alternative sustainable systems by region.	**Francis,ES**	2.0		
	Lander,SCS	.5		
	Parr,& Kemper,ARS	.1		
	CSRS	.1		
	Manale,EPA	.1		
Task 4.2--Identify the educational systems needed to implement the alternative sustainable agricultural production systems.	**Francis,ES**	1.0		
	Lander,SCS	.5		
	Parr,& Kemper,ARS	.2		
	CSRS	1.0		
	Manale,EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Examine the long-term horizon of the tradeoffs of sustainable agricultural production, economic consequences, and resource conditions and values, using the above information.	**SPA,SCS**	2.0		
Task 5.2--Assist in analyzing the sustainable agriculture aspects of base scenarios and alternative scenarios.	**SPA,SCS**	1.0		
	Safley,SCS	.2		
	Bushnell,ES	.2		
	O'Connell,CSRS	.2		
	Parr,& Kemper,ARS	.2		
	Lander,SCS	.2		
	Gilbert,SCS	.2		
	Manale,EPA	.1		

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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN AGRICULTURAL MANAGEMENT TO IMPROVE AIR QUALITY/CONDITIONS?--DRAFT DRAFT

Resource Topic Leader: Lee Herndon
(doc rcaAIQ3, 30 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--AIR QUALITY IMPROVEMENT--WHO? WHAT? WHY? HOW?				
Task 1.1--Explain how agricultural activity impacts on air quality. Describe how it varies by region of the country.	**Herndon,SCS** Fryrear,ARS	.8 .2		
Task 1.2--Describe what atmospheric deposition is, how it is caused and how it affects agriculture and woodland production. Determine the affected regions of the country. Describe the linkages between atmospheric deposition and plant and animal physiology, the ecosystem, and management.	**Herndon,SCS**	.5		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Describe how trace toxics are transported. Explain the causes and where they occur.				
Task 2.2--Cooperate with lead scientists in incorporating data and conclusions from the 1990 NAPAP report. This is the findings for 10 years of acid precipitation research and monitoring. It assesses any reduction in agricultural production. Also, report findings of the National Dry Deposition Program. Determine if findings show effects on agriculture production.	**Barnes,CSRS** Herndon,SCS Cline,FS Barse,ERS Heck,ARS Radloff,FS	1.0 .5 .1 .1 .1 .1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.3--Incorporate data and conclusions from EPA study of soils in watersheds as related to the likelihood of streams and lakes becoming acidic.	**Lammers,EPA** Herndon,SCS Cline,FS Barnes,CSRS	.2 .1 .1 .1		
Task 2.4--Report the latest findings and research work on ozone pollution and the impact on crop production and forest production. Effects on overall productivity--i.e. yield per acre and crop quality will be assessed. Interaction of ozone and acid precipitation will be reported. Strengthening of the monitoring data will be assessed. Temporal and geographical trends in ozone concentration will be reported. Regional impacts on crop production patterns will be studied.	**Barnes,CSRS** Cline,FS Barse,ERS Herndon,SCS	1.0 .3 .3 .3		
TASK 3--TECHNICAL METHODS AND DATA COLLECTIONS				
Task 3.1--Explain the role of agriculture production in improving air quality through biofuels. Coordinate with natural resource topic on "Energy and Industrial Demands."	**Otis,EPA**			
Task 3.2--Cooperate with lead scientists in analyzing effects of UVB radiation on crops and forests and report findings. Report findings on--mechanisms of damage, microorganisms and UVB interactions, plant response to UVB, chemical plant structure and UVB, nitrogen fixing and UVB. Report findings of research on the chemical, bio-chemical and genetic consequences of UVB exposure.	**Barnes,CSRS** Cline,FS Barse,ERS Herndon,SCS	.5 .1 .1 .1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.3--Collect data on cumulative or synergistic effects of atmospheric deposition and other stress-producing factors (pests, disease), especially on forests. Collect data on possible watershed effects in Eastern forests where tree damage is prevalent, especially abnormal increases, fluctuations, and sediment loads in runoff and streamflow.	**Barnes,CSRS** Herndon,SCS Contractor	1.0 .5 12.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Identify research needs for major important crop lines and cultivars to assess crop production potential after UVB impacts. Determine impact changes in yield, quality and production on the use of privately owned soil and water resources and the cost of production. Assess impact on world trade opportunities.	**Barnes,CSRS** Cline,FS Barse ERS Herndon,SCS	.5 .1 .1 .1		
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Study future research needs and recommend directions for research. Establish a scientific team to make continued assessments for USDA to guide research. Collaborate with research institutions to develop directions to meet these research needs.	**Barnes,CSRS** Cline,FS Cowling,NCS McFee,Purdue	1.0 .5 .5 .5		

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DRAFT DRAFT--WHAT ARE THE EFFECTS OF GLOBAL CHANGE ON CONSERVATION?--DRAFT DRAFT
Resource Topic Leader: Richard Arnold
(doc rcaGLC3, 26 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End

TASK 1--GLOBAL CHANGE--WHAT? WHERE? HOW? WHY?

Task 1.1--Describe what is global change.

Task 1.2--Describe how it affects agricultural production such as the linkages between plant and animal physiology, the ecosystem, and management. Describe how this ties in with costs, benefits and agricultural policy.

TASK 2--CURRENT STATUS AND TRENDS

Task 2.1--Report what is known about global change and its effect on agricultural production by region and throughout the world. Use existing studies and analyses from MARS, EPA and NASA to report status, findings and implications. Address climate, soil, water and related resources.

TASK 3--TECHNICAL METHODS AND DATA COLLECTION

Task 3.1--Report the status of EPA's EMAP data collection effort.

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Analyze the results of existing global change studies and report the implications of these findings on domestic and foreign agricultural production capabilities and trade patterns.				
Task 3.3--Analyze the effect global change may have on U.S. cropland use patterns, soil erosion, soil structure, water quality and conservation practices.				
Task 3.4--Use current data to determine the effect global change may have on agriculture production variability and the variability in per acre crop yields as weather patterns change, total crop production, ability of the resource to respond to increases in demand, risk and land use changes over the next 20 to 50 years.				
Task 3.5--Assess the effect of climate change on stability in the domestic range/livestock industry, total agricultural production, potential increases in production and environmental and economic risk by region. Assess the interaction between climate changes, diet changes, and land use patterns for livestock and crop production.				

Task Description	Responsibility (person/agency)	Staff months	Start	End

TASK 4--ALTERNATIVE SOLUTIONS

Task 4.1--Analyze the effect of alternative mitigation strategies proposed by the Committee on Earth Sciences.

TASK 5--FUTURE POLICY ANALYSIS

Task 5.1--Assess how global change may affect agriculture policy, especially addressing conservation, commodity and environmental conditions. Analyze how this alters the scenario formulation to analyze the interaction of commodity, conservation and environmental programs, policies and regulations. Scenarios will be developed based on the latest information.

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DRAFT--WHAT ARE THE POTENTIAL IMPACTS OF PRODUCING BIOMASS FOR ENERGY AND INDUSTRIAL PRODUCTS ON THE CONSERVATION OR DEGRADATION, OR BOTH, OF SOIL AND WATER RESOURCES?--DRAFT

Resource Topic Leader: Thyrele Robertson

(doc rcaEI3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--BIOMASS AS FEEDSTOCK FOR ENERGY AND INDUSTRIAL PRODUCTS--WHAT? WHY? HOW?				
Task 1.1--Describe the role and potential capability of renewable resources to provide energy from agricultural production activities.	**Robertson,SCS**	.5	FY-91	FY-95
	NHQ, SCS	.1		
	NTC,SCS	.1		
	STC,SCS	.1		
	DOE	.1		
	ERS	.1		
	CSRS	.1		
	ES	.1		
	FS	.1		
	ASCS	.1		
	OE	.1		
	Kemper/Harris/ Villet,ARS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 1.2--Describe the role and potential for renewable resources to provide industrial feedstock from agricultural production activities.	**Robertson,SCS**	.5	1/93	3/93
	SOILS,SCS	.1		
	RID,SCS	.1		
	NTC,SCS	.1		
	DOE	.1		
	ERS	.1		
	CSRS	.1		
	ES	.1		
	FS	.1		
	ASCS	.1		
	OE	.1		
	Kemper/Harris/ Villet,ARS	.1		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Identify past and current trends for crops and forestry products used to produce energy by acres and region.	**Robertson,SCS**	.5	1/93	6/93
	SOILS,SCS	.1		
	RID,SCS	.1		
	ECS,SCS	.2		
	NTC,SCS	.5		
	STC,SCS	3.5		
Task 2.2--Identify past and current trends for crops and forestry products used for industrial feedstock by acres and region.	**Robertson,SCS**	.5	1/93	6/93
	SOILS SCS	.1		
	RID,SCS	.1		
	ECS,SCS	.2		
	NTC,SCS	.5		
	STC,SCS	3.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Organize multi-agency team to design and develop work plan for the analysis.	**Robertson,SCS**	.3	6/92	9/92
Task 3.2--Develop work plan, identify existing data sources, identify other data needs, and identify methodologies to be used for data collection and analyses. Major topic areas to be covered include expected changes in sediment and agricultural chemicals reaching the edge of the field and/or surface waters (depends on the analytical technology available); movement of agricultural chemicals through the root zone; competition among food, fiber, and biomass production; farm income, and income and employment in rural areas.	**Robertson,SCS** OE NHQ, SCS NTC,SCS, STC,SCS EPA ERS ASCS DOE	.9 .1 .1 .1 .1 .1 .1 .1 .1	10/92	12/92
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Design alternative scenarios to evaluate how alternative policies and/or levels of demand for biomass will impact on the major topics listed in **Task 3.2**. The design of the analyses will include ways to evaluate the impacts of agricultural and environmental policies. Consultants in the areas of biomass production and processing will be used to design the alternative analyses. The estimated cost of the design process is $40,000.	**Robertson,SCS** NHQ, SCS NTC,SCS STC,SCS SPA,SCS Contractor OE DOE	1.1 .1 .1 .1 .1	10/93	12/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.2--Alternative analyses will be carried out to assess the possible impacts of production controls, price stabilization, income stabilization, and environmental policies on soil and water conservation and/or degradation and on farm income. Effects on the environment will be handled both separately and concurrently. The impact of the various policies on SCS programs and field staff workloads will be estimated. These analyses will be carried out during the period FY 1993-1996 under contract of agreement at an estimated cost of $315,000.	**Robertson,SCS** SPA, SCS RID,SCS SOILS,SCS ECS,SCS NTC,SCS STC,SCS Contractor OE DOE EPA ERS	1.5 .1 .1 .1 .1 .1 .1 12.0 .1 .1 .1 .1	1/94	6/94
TASK 5--FUTURE POLICY ANALYSES				
Task 5.1--Based on results of analyses in **Task 4.2**, identify data needs, models, and methodology for future analyses.	**Robertson,SCS** Contractor OE DOE EPA ERS	.1 .5 .1 .1 .1 .1	7/94	8/94
Task 5.2--Develop RFPs for developing models and data sets for future analyses. The model development and policy analyses are estimated to cost about $100,000 per year for five years.	**Robertson,SCS** Contractor OE DOE ERS	.5 .5 .2 .2 .2	9/94	3/95

THE THIRD RCA APPRAISAL
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DRAFT DRAFT--WHAT ARE THE EFFECTS OF NONAGRICULTURAL DEMANDS FOR LAND--DRAFT DRAFT
Resource Topic Leader: Lloyd Wright
(doc rcaNAL3, 13 JUL 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--NONAGRICULTURAL LAND USES--WHAT? HOW? WHY? WHEN?				
Task 1.1--Define the nonagricultural (reversible and irreversible) uses (urban, industrial, commercial, recreation, transportation, etc.) of privately owned lands. Describe land classes.	Wright,SCS	.1		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Report the past trend and current nonag uses of land by region from NRI data, and the conversion by land use category by region over time. Develop input for **Task 3.2.**	Wright,SCS Smith,SCS	.5 .1		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Report the results of the study which analyzed the effectiveness of the Land Evaluation Site Assessment (LESA) as a tool to protect farmland and to implement the Farmland Protection Policy Act (FPPA). Identify what changes are needed to conserve, protect or enhance agricultural lands.	Wright,SCS FmHA ERS	.5 .1 .2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Analyze the urban buildup (residential, commercial, industry, transportation) data collected by the NRI and CNI and show how these data and other information can be used to show the trend in conversion rates for land to nonag uses. Assess the impact of the population location pattern on land condition and status by region.	**Wright,SCS**	1.0		
	Smith,SCS	.5		
	Maetzold,SCS	.1		
	ERS	.1		
Task 3.3--Based on the NRI and other data sources, analyze nonagricultural land uses to recommend what future actions are necessary to gather data to accurately assess the future trends and rates of land conversion to nonagricultural uses.	**Smith,SCS**	.5		
	Wright,SCS	.1		
	ERS	.2		
Task 3.4--Report the history and role of farmland protection interests of the public as captured in RCA surveys, public comments, NALS study, etc. Evaluate the recommendations and identify the priority of each in protecting farmland.	**Contractor**	2.0		
	Wright,SCS	.3		
	ERS	.2		
Task 3.5--Identify the major factors which have accounted for the conversion of agricultural lands to nonagricultural uses for the last two centuries.	**Contractor**	1.0		
	Wright,SCS	.5		
Task 3.6--Assess the population growth trends in age and structure by region. Analyze immigration policy and its effect on regional trends and composition. Determine the degree of concentration by metropolis, city and town. Determine the pressures on land, water, and other resources such as fish and wildlife, etc.	**Chuang,SCS**	1.0		
	Robertson,SCS	1.0		
	Clearfield,SCS	.1		
	ERS	.5		
	FWS Rep	.1		
	Vesterby,ERS	1.0		
	Libby	.1		
	Darr,FS	.1		
	Swanson,ERS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Identify the goals and priorities which should be assessed in the conversion of land to nonagricultural uses. Consider strong agricultural, regional differences, etc. Assemble an interagency and multi-disciplinary team.	**Wright,SCS** FmHA ERS	1.0 .1 .1		
Task 4.2--Provide alternatives to correct the deficiencies in the Land Evaluation Site Assessment and Farmland Protection Policy Act (FPPA). Show how and where these changes will protect land use and the environment.	**Wright, SCS** University	2.0 3.0		
Task 4.3--Collect & review state and local policies which affect the conversion of land to nonag uses. Report attributes and limitations of each policy. Report where to obtain copies of each state and local policy. This requirement is consistent with FPPA.	**Contractor** Wright,SCS	4.0 1.0		
Task 4.4--Evaluate how the land use protection policies of federal, state and local governments will affect land use patterns by type of user and region. Develop a model or analytical framework which evaluates and compares existing policies and proposed policies. Assemble an interagency team to assist in this effort.	**Contractor** ERS Wright,SCS	6.0 1.0 1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Report results or predict the trend of nonagricultural land uses by type (residential, commercial, industry, transportation, recreation, wildlife, etc.) for the next 50 years by region. Regional size to be determined. Coordinate regional analysis with SPA and other land use analysts. Identify by region the growth in major uses influencing nonag use conversions.	**Wright,SCS** ERS SPA,SCS USGS COE	3.0 .5 .1 .1 .1		
Task 5.2--Assess the farmland policy protection sections of the 1981, 1985, 1990 farm bills. Determine what additional policies are needed to insure a robust and viable land base to meet world and domestic demand.	**Wright,SCS** FmHA ERS	1.0 .2		

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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN NONAGRICULTURAL WATER MANAGEMENT?--DRAFT DRAFT
Resource Topic Leader: Don von Wolffradt

(doc rcaNAW4, 25 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--NONAGRICULTURAL WATER USES--WHAT? HOW? WHY? WHEN?				
Task 1.1--Identify the nonagricultural water uses and water markets (urban, industrial, commercial, recreation, transportation, wildlife, golf courses, fish, military, Federal reserved water, etc.). (Data will be collected as part of HUMUS contract.)	**von Wolffradt, SCS**	1.0	10/92	9/93
	Frost,SCS	1.0		
	Walker,SCS	2.0		
	USGS	1.0		
	Ankrah,EPA	.5		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Use models to estimate historical nonagricultural water use and current conditions.	**von Wolffradt, SCS**	1.0	10/92	9/93
	Frost,SCS	1.5		
Task 2.2--Make projections of future nonagricultural water needs with various nonagricultural water use assumptions.	**von Wolffradt, SCS**	0.5	10/92	9/93
	Frost,SCS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Historical data will be collected from the "Second National Water Assessment," Water Resources Council, 1975; streamflow and water use data collected by the U.S. Geological Survey; SCS SNOTEL; SCS NRI survey; Census of Agriculture; and other recent surveys.	**von Wolffradt, SCS**	1.0	10/92	9/93
	Frost,SCS	1.0		
	Walker,SCS	2.0		
	USGS	.5		
	NASS	.5		
Task 3.2--Collect and review federal, state and local laws and policies which affect conversion of water to nonagricultural water use. Impediments to efficient use of water resources will be reported.	**von Wolffradt, SCS**	0.5	10/92	9/93
	Frost,SCS	0.5		
	Carmack,SCS	0.5		
	Shelton,SCS	0.5		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Determine the effects of droughts on instream water use for fish and wildlife. Evaluate need to maintain or increase instream flow.	**von Wolffradt, SCS**	0.5	10/92	9/94
	Frost,SCS	1.0		
Task 4.2--Evaluate how water quality and quantity issues will impact nonagricultural water use and the location of the nonagriculture activity.	**Walker,SCS**	0.5	10/93	10/94
	Frost,SCS	0.5		
	Ankrah,EPA	0.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.3--Assess the effect of population pressures on nonagricultural water use. Identify water short rural communities. Use existing River Basin studies and other sources of data to update the inventory.	**Chuang,SCS** Walker,SCS Frost,SCS STC,SCS	1.0 .5 2.0 4.0	10/92	10/94
Task 4.4--Assess competition of nonagricultural water uses for agricultural water supplies. Identify issues and locations where there is pressure to use agricultural water sources for nonagricultural uses.	**Carmack,SCS** Frost,SCS FS	1.0 1.5 .5	10/93	10/94
Task 4.5--Evaluate how the land use protection policies of Federal, State and local governments affect nonagricultural water use.	**Rayburn,SCS** Wright,SCS Frost,SCS ERS	0.5 0.5 .5	10/93	10/94
Task 4.6--Determine water use on protection/ restoration of wetlands. Make projections for acres of wetlands affected, with various amounts of water use for both agriculture and nonagriculture.	**Gray,SCS** Frost,SCS Wright,SCS	1.0 1.5 .5	10/93	9/94
Task 4.7--Identify the need to maintain and increase, where possible, nonagricultural water supplies.	**von Wolffradt, SCS** Frost,SCS FS	0.5 1.0 ?	10/93	9/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Analyze the effects of proposed legislation on nonagricultural water quantity and uses.	**von Wolffradt, SCS**	0.5	10/93	10/94
	Frost,SCS	1.0		
	ERS	.5		
	EPA	.5		
	FS	.3		
Task 5.2--Evaluate nonagricultural water use under institutional policies and laws affecting water management.	**Rayburn,SCS**	0.5	10/94	10/95
	Frost,SCS	0.5		
	ERS	.5		
	EPA	.5		
	FS	.3		
Task 5.3--Account for the significance of instream flows, withdrawals, consumptive and nonconsumptive uses.	**von Wolffradt, SCS**	0.5	10/94	10/95
	Frost,SCS	0.5		
	ERS	.5		
	EPA	.5		
	FS	.3		

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT ARE THE EFFECTS OF CONSERVATION ON THE RURAL SECTOR?--DRAFT DRAFT
Resource Topic Leader: Liu CHUANG
(doc rcaCRS3, 7 JUL 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--RURAL SECTOR AND CONSERVATION--WHAT? WHEN? WHY? HOW?				
Task 1.1--Define the rural sector from the perspective of the conservation of natural resources. Describe the interrelationships between conservation policy and regulations and rural America. Show how these policies impact upon and benefit the rural social structure and economy.	**Chuang,SCS**	.5	6/92	11/92
	Robertson,SCS	.5		
	Clearfield,SCS	.5		
	B.Smith,SCS	.5		
	Carlin,ERS	.5		
	REA Rep	.5		
	NASS Rep	.1		
	Commerc-BEA Rep	.1		
	English,Tenn U.	.1		
	Bouchard,SCS	.1		
	ES Rep	.1		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Establish a baseline for the relationships between conservation agriculture and the rural economy to analyze the changes resulting from future conservation policy using trend data. Problem areas requiring both conservation and economic support will be identified. Use 1987 census data, FSA 85 and FACTA 90 provisions to determine the baseline. Consider state and local laws and regulations.	**Chuang,SCS**	1.0	6/92	11/92
	Robertson,SCS	1.0		
	Clearfield,SCS	.2		
	B.Smith,SCS	.2		
	Carlin,ERS	.2		
	REA Rep	.2		
	NASS Rep	.2		
	Commerc-BEA Rep	.2		
	English,Tenn U.	.2		
	Bouchard,SCS	.2		
	DOE Rep	.2		
	ES Rep	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Define the rural regions for analysis. Develop the IMPLAN Model to analyze the relationships between conservation and the rural economy by region. These relationships will be based on the 1982 national I/O table and available regional data developed at the time of impact estimation. Estimated impact of alternative policies and scenarios will be measured for the various agricultural supplies and services located in each region of rural America.	**Chuang,SCS**	2.0	12/92	3/93
	Robertson,SCS	1.0		
	Clearfield,SCS	.2		
	Petrulis,ERS	2.0		
	REA Rep	1.0		
	NASS Rep	1.0		
	Commerc-BEA Rep	1.0		
	ES Rep	.2		
	Alward,FS	1.0		
	B.Smith,SCS	1.0		
	Bouchard,SCS	1.0		
	DOE Rep	.2		
	TAMUS	2.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Develop scenarios for analysis by using changes of key policy elements in FSA 85, 1990 Farm Bills, Clean Water Act, NEPA, FIFRA, and other conservation environmental policies. Coordinate the development of scenarios with other RCA activities.	**Chuang,SCS**	1.0	4/93	7/93
	Robertson,SCS	.5		
	Clearfield,SCS	.2		
	Petrulis,ERS	.5		
	REA Rep	.2		
	NASS Rep	.2		
	Commerc-BEA Rep	.2		
	ES Rep	.2		
	Alward,FS	.2		
	B.Smith,SCS	.1		
	Bouchard,SCS	.1		
	DOE Rep	.1		
	EPA Rep	.5		
	TAMUS	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.2--Estimate the effect on the rural economy by region due to the changes of selected Federal, state and local policies and RCA conservation scenarios.	**Chuang,SCS**	2.0	4/93	8/93
	Robertson,SCS	1.0		
	Clearfield,SCS	1.0		
	Petrulis,ERS	1.0		
	REA Rep	.4		
	NASS Rep	.4		
	Commerc-BEA Rep	.4		
	ES Rep	.2		
	Alward,FS	.4		
	B.Smith,SCS	.4		
	Bouchard,SCS	.2		
	DOE Rep	.2		
	EPA Rep	.2		
	TAMUS	1.0		
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Analyze the effect of proposed commodity, conservation and environmental policies on the regional rural economy as production and expenditure levels change due to domestic and world demands. The potential future regional effects of the production and environmental policy scenarios will be compared for selected regions. The long term effects will be studied through an Input/Output analysis for the 1995 farm bill analysis and updated for the Appraisal in 1995.	**Chuang,SCS**	2.0	9/93	3/94
	Robertson,SCS	1.0		
	Clearfield,SCS	1.0		
	Petrulis,ERS	1.0		
	REA Rep	.2		
	NASS Rep	.2		
	Commerc-BEA Rep	.2		
	ES Rep	.2		
	Alward,FS	.2		
	B.Smith,SCS	.2		
	Bouchard,SCS	.1		
	DOE Rep	.1		
	EPA Rep	.1		
	TAMUS	1.0		

THIRD RCA APPRAISAL
Plan of Work

DRAFT DRAFT--WHAT ARE THE RURAL SOCIOLOGICAL EFFECTS OF AND ON CONSERVATION ADOPTION?--DRAFT
Resource Topic Leader: Frank Clearfield
(doc rcaSOC3, 26 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--SOCIOLOGY --ITS ROLE IN CONSERVATION				
Task 1.1--Define sociology. Describe its role in conservation planning, rural development, water resource projects. How is the discipline being used?	**Clearfield,SCS** Dishongh,SCS Makowski,SCS MWNTC Soc.& WNTC Soc.	.5 .2 .2 .2		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Describe demographic changes in the social structure of agriculture and how these changes affect conservation activities.	**Clearfield,SCS** 4 NTC Soc. Univ. Res.	.5 2.0 3.0		
Task 2.2--Identify the configurations of Federal, state, and local laws and regulations and their effect on conservation attitudes and conservation behavior. How do these policies affect social and economic groups regarding migration, economic development, health, and jobs?	**Clearfield,SCS** SCS state & field employees 4 NTC Soc.	4.0 16.0		
Task 2.3--Identify the importance of agricultural land conversion to urban and suburban uses, and describe the social and environmental impacts.	**Univ. Res.**	5.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.4--Examine the impact of agrichemical use, both direct and indirect, on the health of the applicator, the bystander and the consumer, and the environmental impact on surface and ground water quality. What are the nonfarming and farming publics' attitudes toward food safety and agrichemical use?	**Univ. Res.**	5.0		
Task 2.5--Examine the concept of multiple use of rangeland and forestland with respect to institutional leases, recreational leases, and hunting. What effect do these and other uses have on communities and rural development? What was the social and economic impact of the Conservation Reserve Program?	**Univ. Res.**	10.0		
Task 2.6--Examine the impacts that policies, laws, and rules have on Limited Resource and Minority Farmers (LRMF). Are different ethnic and minority groups affected differently by the present compendium of laws? What modifications are made in outreach efforts to address these differences? Has alternative agriculture or sustainable agriculture been a positive influence on LRMF?	**Ruffin,SCS** Tatum,SCS Clearfield,SCS Barron,SCS Univ. Res. 4 NTC Soc.	4.0 4.0 4.0 4.0 3.0 4.0		
Task 2.7--Explain the concept of conservation marketing and how it can be and has been used in promoting adoption of conservation systems. Report results of focus group meetings and surveys. Recommend marketing techniques that are best suited for increasing participation in Federal, State,and local conservation programs.	**Schertz,SCS** Clearfield,SCS Makowski,SCS Dishongh,SCS Swanson,SCS 4 NTC Soc.	3.0 .7 1.0 1.0 .7 4.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Exchange information through an interdisciplinary, interagency ad hoc group task force whose purpose is to advise and update the national sociologist on topics, studies, and projects that are related to RCA topical concerns.	**Clearfield,SCS**	.4		
	4 NTC Soc.	1.6		
	Helms,SCS	.4		
	Dishongh,SCS	.4		
	Makowski,SCS	.4		
	Bennett,CES	.4		
	Bottum,CES	.4		
	Stuby,CSRS	.4		
	Thigpen,TX A&M	.4		
	Ross, ERS	.4		
Task 3.2--Organize a two-day symposium for investigators to present research information that will review existing literature on RCA-related topics and will summarize and present new information on the sociological topics.	**Clearfield,SCS**	2.0		
	4 NTC Soc.	1.0		
	Maetzold,SCS	.5		
Task 3.3--Use GIS-related methods to integrate physical and social information.	**Clearfield,SCS**	6.0		
	4 NTC Soc.	8.0		
	Paczwa,SCS	9.0		
Task 3.4--Collect papers written on research projects and studies to provide a summary of the literature and primary research on the topics.	**Univ. Res.**	6.0		
	4 NTC Soc.	9.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Project social impacts of conservation programs, laws, and regulations, by region and by socio-economic group.	<u>Univ. Res.</u> Clearfield,SCS 4 NTC Soc.	5.0 .2 4.0		

THE THIRD RCA APPRAISAL
Plan of Work

DRAFT DRAFT--WHAT ARE THE EFFECTS OF CONSERVATION POLICIES ON CULTURAL RESOURCES?--DRAFT DRAFT
Resource Topic Leader: Mike Kaczor
(doc rcaCUL3, 23 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--CULTURAL RESOURCES WHAT? WHY? WHEN? HOW?				
Task 1.1--Define and describe rural cultural resources. Explain the importance and role of rural cultural resources in our society.	Kaczor,SCS	.3	6/92	8/94
Task 1.2--Describe why cultural resources protection is a conservation activity.	Kaczor,SCS	.1	6/92	8/94
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Identify the Federal, State and local laws that govern the protection and use of these cultural resources. Make a compilation of the Federal, State and local laws that affect the protection and conservation of cultural resources in rural America.	Kaczor,SCS Hertfelder, NCSHPO	1.5 .5	8/92	5/94
Task 2.2--Describe the trend and roles of society in the conservation and protection of cultural resources on private lands in rural America. Compare these results with the conservation and protection of cultural resources on Federal lands.	Kaczor,SCS Hertfelder, NCSHPO	3.0 1.0	1/93 1/93	5/95 5/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.3--Present the major findings of the National Trust Study of the effect of Federal programs on rural cultural resources. This study reports the effects of USDA programs on cultural resources, rural development opportunities, economic enhancement and historic preservation community goals.	**Nat'l Trust** Staff	.2	6/92	4/94
	Kaczor,SCS	.2		
	Bouchard,SCS	.1		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Assemble an interdisciplinary and interagency team to design survey elements and the techniques for making an assessment of status, conditions and trends of rural cultural resources on privately owned lands.	**Kaczor,SCS**	2.0	7/92	1/94
	Root,SCS	.2		
	MNTC CRS	1.0		
	Nat'l Trust Staff	1.0		
	NCSHPO	1.0		
	RID	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Initiate a system to assess the nation's cultural resources on rural agricultural and range land with a pilot assessment to determine the effect of agricultural sources of erosion on cultural resources. Suggested states are Arkansas, Ohio, or Illinois. Develop a system to use SCS-GRASS data layers of soils, topography, cultural resource site locations, water, and vegetation to assess cultural resource protection.	**Riggle,SCS** Kaczor,SCS RID,SCS GIS,NTC CGIS,NHQ	3.0 2.0 1.5 2.0 1.0	1/93	4/94
Task 3.3--Determine how conservation practices and environmental practices improve or degrade cultural resource site conditions using models and NRI data. Develop a qualitative model using the information in **Task 3.2** to predict cultural resource site conditions. Conduct model validation tests with known site conditions and conservation practices. Identify NRI and MLRA data useful for predicting over larger geographic areas.	**RIC,SCS** Riggle,SCS MNTC Kaczor,SCS	1.0 2.0 2.0 2.0	7/93	12/94
Task 3.4--Based on above tasks, refine data elements, data needs and data collection techniques for use in a nationwide assessment and prediction of conditions of cultural resources on agricultural land as agricultural management practices and land use patterns change.	**Kaczor,SCS** Riggle,SCS NCSHPO	2.0 1.5 .5	10/93	3/95

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Identify and determine the regional agricultural and nonagricultural activities that are most destructive to rural cultural resources. Using models developed in **Task 3**, identify alternatives to minimize the impact of the destructive agricultural activities.	**Kaczor,SCS** Root,SCS	2.0 .2	12/93	5/95
Task 4.2--Assess the impact of agricultural commodity programs on the protection of cultural resources using existing research data. Analyze the effects of various FSA requirements on cultural resources based on model and research findings. Identify any regional difference and explain why the variation exists. Identify the effects of conservation practices on cultural resources protection using pilot study and models of **Task 3**.	**Kaczor,SCS** Root,SCS Riggle,SCS Lawrence,SCS ERS Nat'l Trust Staff NCSHPO	3.5 .2 4.0 .5 .5 1.5 2.0	7/93	6/95
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Evaluate policies and program changes being considered in 1994 to protect and enhance the cultural resource base on agricultural lands. Determine the changes needed in conservation programs and policies. Assess the effect of such changes on agricultural producers' economic position and American agriculture's competitiveness.	**Kaczor,SCS** Root,SCS Lawrence,SCS Nat'l Trust Staff Bouchard,SCS SPA,SCS NCSHPO	1.0 .5 .5 .5 .5 1.0 2.0	1/95	8/95

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT IS THE ROLE OF THE PUBLIC IN SUPPORTING CONSERVATION?--DRAFT DRAFT

Resource Topic Leader: Liu Chuang
(doc rcaCPC3, 25 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--CONSERVATION AND PUBLIC COST--WHAT? WHERE? WHY? HOW?				
Task 1.1--Describe the public's role in supporting both technical and financial assistance in promoting conservation of soil, water, environment and other natural resources in a free enterprise society.	**Chuang,SCS**	1.0	6/92	7/92
	Robertson,SCS	0.5		
	Denley,ASCS	0.5		
	Royston,OBPA	0.5		
	Jones,EPA	0.5		
Task 1.2--Assemble an interdisciplinary and multi-agency team to define the scope of this study by identifying the conservation efforts to be examined, the direct and indirect costs to different levels of governments and the private sector costs to producers and consumers to be considered in the analysis.	**Chuang,SCS**	1.0	8/92	9/92
	Robertson,SCS	0.5		
	Denley,ASCS	0.5		
	Royston,OBPA	0.5		
	Jones,EPA	0.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Survey state and local governmental programs and budgets to supplement the available state and local conservation contribution data.	**Chuang,SCS**	3.0	10/92	3/93
	Robertson,SCS	2.0		
	Denley,ASCS	1.0		
	Royston,OBPA	1.0		
	Jones,EPA	0.5		
	Sawyer,SCS	1.0		
	Kempf,SCS	0.5		
	English,Univ/TN	0.2		
	STCs	2.0		
Task 2.2--Estimate the public conservation costs to federal governments, state governments, and local governments by programs.	**Chuang,SCS**	3.0	4/93	7/93
	Robertson,SCS	2.0		
	Denley,ASCS	1.0		
	Royston,OBPA	1.0		
	Jones,EPA	0.5		
	Sawyer,SCS	1.0		
	Kempf,SCS	0.5		
	English,U/TN	0.2		
Task 2.3--Estimate the private costs of conservation efforts of producers by program, by region, and by specific locale. Determine both direct and indirect costs.	**Robertson,SCS**	3.0	8/93	12/93
	Chuang,SCS	2.0		
	English,U/TN	1.0		
	Denley,ASCS	1.0		
	Royston,OBPA	0.5		
	Jones,EPA	0.5		
	Sawyer,SCS	0.5		
	Kempf,SCS	0.5		
	Contractor	4.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION.				
Task 3.1--Analyze the equity issue of public and private cost sharing for conservation. Show differences among regions and program recipients.	**Chuang,SCS** Robertson,SCS Denley,ASCS	2.0 2.0 0.5	1/94	4/94
Task 3.2--Analyze the direct and indirect costs to consumers of conservation policies, rules and regulations by program and by region. Analyze both incentive and regulatory programs.	**Chuang,SCS** Robertson,SCS Denley,ASCS Contractor	2.0 2.0 0.5 2.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Analyze how a national public program which supports agricultural commodity production can be oriented to promote land, water and other environmental stewardship as well as production stability. Identify alternative programs and assess their implications for a stable domestic food supply and world trade. Determine the effect these programs have on the redistribution of public monies by region and farm size.	**Chuang,SCS** Contractor	1.0 8.0	5/94	8/94

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Analyze the effect of current and proposed Farm Bill provisions on future public and private costs by program and by region for 1995 farm bill analysis, and update for the Appraisal. Determine if regional equity needs to be addressed as regional production patterns shift.	**Chuang,SCS** Royston,OBPA Jones,EPA Sawyer,SCS	0.5 0.5 0.5 0.5	9/94	12/94

THE THIRD RCA APPRAISAL
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DRAFT DRAFT--WHAT IS THE ROLE OF TOTAL RESOURCE MANAGEMENT PLANNING IN CONSERVATION?--DRAFT

Resource Topic Leader: James Maetzold

(doc rcaTRM3, 1 JUL 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--TOTAL RESOURCE MANAGEMENT--WHAT? HOW? WHY? WHEN?				
Task 1.1--Define total resource management (TRM). What is it? How does it address soil, water, air, plants, and animals (SWAPA)? How does it apply? How can it be used by national policy analysis and farm level planning?	Maetzold,SCS Benson,SCS Ayer,FS ERS EPA	1.5 .5 .2 .2 .2		
TASK 2-CURRENT STATUS AND TRENDS				
Task 2.1--Review existing federal and state conservation policies and other agricultural and nonagricultural policies that would encourage the implementation of multiple resource planning. Collect the information through a survey.	Maetzold,SCS Contractor State Office	2.0 6.0 .1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Report on the benefits of interdisciplinary teams in TRM planning. Identify the benefits and limitations of each discipline in planning TRM. Describe the result of a better plan with TRM planning.	**Jann,SCS**	1.0		
	SCS:Agron	.5		
	Soil	.5		
	Eng.	.5		
	LandUse	.5		
	SocSci	.5		
	Bio.	.5		
	Forestry	.5		
	Cultural	.5		
	Ayer,FS	.5		
	EPA	.5		
	ERS	.5		
Task 3.2--Determine how to assess the interactions and effects of each resource upon another in a TRM environment (SWAPA). Determine the compatibility of TRM by type of use. Identify what works and doesn't work by region. Assess the changes in conditions of the resources as a TRM plan is implemented.	**Maetzold,SCS**	1.0		
	SCS:Agron			
	Soil	.5		
	Eng	.5		
	LandUse	.5		
	SocSci	.5		
	Bio	.5		
	Forestry	.5		
	Cultural	.5		
	Ayer,FS	.5		
	EPA	.5		
		.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Determine how to address to what effect a single management impacts multiple resources. Develop a quantitative methodology for measuring the impact on each resource and combination of all resources. Present examples of how this impact works to assess form, program and National systems.	**Benson,SCS**	4.0		
	Maetzold,SCS	.5		
	Alt,SCS	.5		
	Atwood,SCS	.5		
	CPA	.2		
	LTD	.2		
	ECS	.2		
	TAMUS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.4--Review existing case studies of total resource management and present the results of these studies and other related reports. Present case study results by region to show TRM planning for different areas characteristic of the country. For example, a study on farm operations in the Northeast, riding and camping in the mountains, rangeland leasing, landscape and birdwatching, etc. Also, case studies showing community (county and multi-county) efforts of encouraging urban participation in rural American life from camping, hiking, riding, crafts, antiques, bed & breakfast, county fairs and similar events, etc.	**Maetzold,SCS**	1.0		
	Jann,SCS	.5		
	Agron,SCS	.5		
	Soil,SCS	.5		
	Eng,SCS	.5		
	LandUse,SCS	.5		
	SocSci,SCS	.5		
	Bio,SCS	.5		
	Forestry,SCS	.5		
	Cultural,SCS	.5		
	4 NTC,SCS	4.0		
	48 State Offices	10.0		
Task 3.5--Review existing case studies where interdisciplinary teams have developed TRM plans. Discuss the attributes and limitations of each plan and provide guidance on how to avoid future problems. Prepare a guide for field office TRM planning.	**Maetzold,SCS**	.2		
	Jann,SCS	1.0		
	4 NTC,SCS	4.0		
	48 State Offices	10.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Pilot test what state and local actions are necessary to encourage the implementation of total resource management planning at community or higher levels. Develop a set of five sample programs to implement a test and compare the results of alternative sample programs. Integrate the physical, biological and economic resource interrelationships in the pilot test and report the results.	**Maetzold,SCS**	4.0		
	Jann,SCS	1.0		
	4 NTC,SCS	4.0		
	5 State Offices	5.0		
Task 4.2--Analyze quantitatively how different management systems at farm, program and National levels impact the quantity and quality of resources at each level. Rank impacts of each system and program on each resource and provide an overall assessment.	**Benson,SCS**	4.0		
	Maetzold,SCS	.2		
	Alt,SCS&	.5		
	Atwood,SCS	.5		
	LTD,SCS	.2		
	CPA,SCS	.2		
	ECS,SCS	.2		
	Ayers,FS	.2		
	EPA	.2		
	ERS	.2		
	TAMUS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Evaluate the role of interdisciplinary and integrated resource management in conservation, commodity and environmental planning. Show its role in policy analysis, policy formulation and program development. Describe its use in future policy analysis when addressing multiple uses of resources.	**Maetzold,SCS**	2.0		
	Jann,SCS	.2		
	NHQ,SCS	.2		
	Ayer,FS	.2		
	CES	.2		
	ERS	.2		
	OBPA	.2		
	BLM	.2		
	COE	.2		
	NPS	.2		
	BOR	.2		
Task 5.2--Use TRM planning to rank alternative systems or programs to achieve predetermined goals. TAMUS multiple goal programming system will assist in meeting this objective. Use ordinal and cardinal ranking systems to evaluate these programs and systems relative to the goals. This permits decisionmakers to examine many resource attributes of each system or program.	**Atwood,SCS**	2.0		
	Benson,SCS	.5		
	Maetzold,SCS	.2		
	Alt,SCS	.5		
	ECS,SCS	.5		
	LTD,SCS	.2		
	CPA,SCS	.2		
	Ayer,FS	.2		
	EPA	.2		
	ERS	.2		
	OBPA	.2		
	TAMUS	2.0		

Third RCA Appraisal
Plan of Work

DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN RECREATION MANAGEMENT--DRAFT DRAFT

Resource Topic Leader: Gary JANN
(doc rcaREC3, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--RECREATION MANAGEMENT-WHAT? HOW ? WHY? WHEN?				
Task 1.1--Define the role of recreation in total resource (TRM) management on private and nonfederal lands. Describe how technical assistance is provided to initiate recreation activities. Describe types of technical assistance and information needed.	Jann,SCS Maesner,SCS NTC,SCS	.5 .2 .4		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--What is the trend in recreation activities on privately owned nonfederal and public lands in rural areas? What are the implications for TRM?	Jann,SCS BLM NPS FS BOR COE ES RDA	.5 .1 .1 .1 .1 .1 .1 .1		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Collect existing data and information on recreation use, opportunities, demand for recreation and the philosophy of recreation development on private and nonfederally owned lands. Gather pertinent research information on the type of recreation activities the public wants, both available and desired recreation use by land type (cover and use), incentives and obstacles, fee and nonfee uses, recreation values (users' willingness to pay), availability of insurance for landowners' protection, opportunities for recreation development, role of recreation in rural economic stability, demand for technical recreation assistance, etc.	**Jann, SCS** Clemson U. SO,SCS	1.0 12.0 .1		
Task 3.2--Compile data and information collected in Task 2 into a recreation data base for state, regional and national planning.	**Jann,SCS** Cordell,FS Clemson U.	.5 2.0 2.0		
Task 3.3-- Evaluate the implications of the "President's Commission on Americans Outdoors" report for the private landowner and TRM. Identify the opportunities and impediments discussed in the report.	**Jann,SCS** NPS COE FS BLM ES RDA BOR	.1 .1 .1 .1 .1 .1 .1 .1		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.4--Identify by recreation use and region, what additional information requested by field offices is needed to meet demands for technical assistance in recreation and TRM. Develop this with the use of an interdisciplinary team.	**Jann,SCS**	1.0		
	Maesner,SCS	.5		
	4 NTCs,SCS	4.0		
	ES	.5		
	ERS	.5		
Task 3.5--Identify those areas that have good potential for recreation uses, but where there is a lack of private enterprise offering farmers and landowners advice on recreation management.	**Jann,SCS**	1.0		
	Cordell,FS	1.0		
	Maesner,SCS	.5		
	Clemson U.	.5		
Task 3.6--Design alternative data collection systems to acquire the necessary information to aid private landowners and communities in establishing recreation opportunities.	**Jann,SCS**	1.0		
	Cordell,FS	1.0		
	Maesner,SCS	.5		
	Clemson U.	.5		
Task 3.7--Initiate, manage and complete actions to collect additional data identified in **Task 3.4** that will assist in establishing trends and opportunities for recreation in TRM on privately owned and nonfederal lands. Several data elements are currently being collected for technical assistance planning.	**Jann,SCS**	6.0		
	Cordell,FS	12.0		
	University	24.0		
	STC	2.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.8--Evaluate successful and unsuccessful case studies which can be used to identify the various opportunities available for recreation as well as how these activities could increase farm/ranch income. Compile the results for use in field offices for technical assistance in recreation planning.	**Jann,SCS** 4 NTC,SCS 48 SO,SCS	1.0 4.0 10.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Analyze all available data to see how it can be used in determining recreation use patterns, and provide technical assistance for identifying opportunities on private and nonfederal lands. Compile the information for use in NTC and state offices.	**Jann,SCS** Cordell,FS Clemson U.	1.0 1.0 1.0		
Task 4.2--Assess the effect existing farm and federal programs and policies have on opportunities to develop recreation in TRM in rural areas. Show how recreation planning and technical assistance tie in with USDA rural vitalization and rural diversification efforts.	**Jann,SCS** Maesner,SCS Bouchard,SCS Safley,SCS Otte,SCS SPA,SCS RDA	1.0 1.0 .1 .1 .1 .1 .5		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Develop a plan for transferring the knowledge gained through the literature and information search and research to disseminate it for field application for recreation in TRM. Assemble an interdisciplinary team of NHQ and NTC staff to develop the technology transfer plan. Outline data and information plan to include recreation manual supplements, national bulletins, SCS workshops, technical guides, etc. Develop a plan on how best to incorporate the data into farm level and regional models to evaluate the economic impact of recreation opportunities on the private land owner.	**Jann,SCS** 4 NTC,SCS Bouchard,SCS Safley,SCS Root,SCS Rittall,SCS Otte,SCS SPA,SCS Maesner,SCS	1.0 4.0 .1 .1 .1 .1 .1 .1 .1		

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DRAFT DRAFT--WHAT OPPORTUNITIES EXIST IN UPSTREAM FLOOD MANAGEMENT--DRAFT DRAFT

Resource Topic Leader: Don von Wolffradt
(doc rcaUSF4, 25 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--UPSTREAM FLOOD HAZARDS - WHAT? WHY? HOW? WHEN?				
Task 1.1--Identify the major types of agricultural and nonagricultural activities that create or contribute to upstream flood hazards.	**von Wolffradt, SCS**	0.5	10/92	9/93
	Frost,SCS	0.5		
TASK 2--CURRENT STATUS AND CONDITIONS				
Task 2.1--Identify the historical and current upstream flood losses to cropland, range land, forest land, other lands, rural communities, farmsteads, and other areas where flood waters come from agricultural lands. Estimate projected upstream flood losses on a national scale, based on statistical data supplied by case studies.	**von Wolffradt, SCS**	1.0	10/92	9/95
	Frost,SCS	1.0		
	Lawrence,SCS	1.0		
	Ward,SCS	1.0		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Historical data from the "Second National Water Assessment," Water Resources Council, 1975 and the "Assessment of the Nation's Floodplain Management," Federal Interagency Task Force for Floodplain Management, 1992 will be used.	**von Wolffradt, SCS**	1.0	10/92	9/94
	Frost,SCS	1.0		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Current upstream flood loss information will be collected and analyzed for ten states. Six states have recently completed the upstream flood loss inventory.	**Dyer,SCS**	2.0	9/91	9/95
	Ward,SCS	0.5		
	STC 10 States	12.0		
	von Wolffradt, SCS	1.0		
	USGS	.1		
	COE	.1		
Task 3.3--Evaluate reports received from State Conservationists on Short-Term Natural Phenomenon Report for upstream flood events and the magnitude of the floods.	**von Wolffradt, SCS**	1.5	10/94	9/95
	Smith,SCS	0.5		
	COE	.1		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Determine if the 1987 PL 566 Watershed Protection and Flood Prevention program evaluation should be updated. Identify cost/benefits and recommended changes to increase program effectiveness.	**Otte/Ward,SCS**	3.0	10/92	9/95
	Transfer,SCS	12.0		
	Lawrence,SCS	1.0		
	STC	12.0		
Task 4.2--Evaluate the PL 534 Flood Prevention program. Determine the cost and benefits of completed subbasins. Identify factors that contribute to cost and benefits of the program.	**Otte/Ward,SCS**	3.0	10/92	10/95
	Transfer,SCS	12.0		
	Lawrence,SCS	1.0		
	STC	12.0		
Task 4.3--Identify upstream rural communities with minority disadvantaged populations. Conduct water source reviews to show what measures are needed. Recommend changes to increase participation by minority and other disadvantaged groups.	**Dyer,SCS**	1.0	10/92	9/95
	Clearfield,SCS	1.0		
	Ward,SCS	1.0		

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.4--Determine how CRP policies contribute to floodplain management principles. Recommend changes to encourage planting of low-intensity crops grown on floodplains.	**von Wolffradt, SCS** Butz,SCS	1.0 0.5	10/92	9/95
Task 4.5--Initiate water resource activities to assess opportunities for preservation/restoration of wetlands and riparian areas.	**Dyer,SCS** Ward,SCS Ankrah,EPA COE	1.0 0.5 .1 .1	10/92	9/95
Task 4.6--Ensure that programs include floodplain management measures in suitable water resource projects. Use the "Unified National Program for Floodplain Management" for flood reduction strategy: 1) modify susceptibility to flooding; 2) modify flooding; 3) modify the impact of flooding; and 4) restore and protect natural resources on floodplains. Recommend program changes to include a full array of alternative solutions. Conduct RCA special study to test alternative policies.	**von Wolffradt, SCS** Frost,SCS Ward,SCS Dyer,SCS	1.0 1.0 0.5 0.5	10/92	9/95
Task 4.7--Evaluate the effects of upstream flooding along coastal areas. Recommend policy changes to strengthen SCS water resource programs in reducing coastal flooding.	**Frost,SCS** von Wolffradt, SCS	1.0 0.5	10/92	6/95
Task 4.8--Determine the effects upstream flooding has on infrastructure. Recommend changes to strengthen SCS policy.	**Frost,SCS** Wehri,SCS FEMA	0.5 0.5 .1	10/93	6/95

Topic and Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Assess the compatibility of CRP with floodplain management principles and recommend changes. Address: tree plantings, vegetation on fringe areas, restoration of wetlands, plantings in watershed areas, and assistance to disadvantaged rural communities.	**Butz,SCS**	0.5	10/93	9/96
	Stewart,FS	0.5		
	von Wolffradt, SCS	0.5		
	Frost,SCS	0.5		
	Ankrah,EPA	.1		
	USGS	.1		
	ERS	.1		
	COE	.5		
Task 5.2--Evaluate deaths and flood damage in upstream communities and the policy changes needed to reduce them.	**von Wolffradt, SCS**	1.0	10/93	9/95
	Frost,SCS	0.5		
Task 5.3--Analyze the effects of upstream flooding on proposed legislation.	**von Wolffradt, SCS**	1.0	10/92	9/94
	Frost,SCS	1.0		
	Ankrah,EPA	.1		
	FEMA	.2		
	USGS	.1		
	COE	.1		
	ERS	.1		

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DRAFT--WHAT IS THE ROLE OF FEDERAL, STATE AND LOCAL PARTNERSHIPS IN CONSERVATION?-- DRAFT

Resource Topic Leader: Karl Reinhardt
(doc rcaFLS3, 26 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1-- FEDERAL, STATE, AND LOCAL PARTNERSHIPS, WHAT? WHY? HOW? WHEN?				
Task 1.1-- Explain the partnerships of Federal, state and local governments and how they work together to conserve natural resources. Include the roles of non-government groups and treaty tribes.	**Reinhardt,SCS**	.3	4/92	7/92
	NACD	.2		
	NASDA	.1		
	NACO	.1		
	ES	.1		
	ASCS	.1		
	Helms,SCS	.2		
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Describe the current structure and implementation of policies among these partnerships.	**Reinhardt,SCS**	.5	5/92	9/92
	NACD	.2		
	NASDA	.1		
	NACO	.1		
	ES	.1		
	ASCS	.1		
	Helms,SCS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.2--Explain the social, economic, political, and environmental trends that led to the development of conservation laws and regulations. Summarize the impetus for modification of legislation which affects conservation program partnerships.	**Reinhardt,SCS**	.5	6/92	10/92
	Helms,SCS	.2		
	NACD	.1		
	NASDA	.1		
	ES	.1		
	ASCS	.1		
	EPA	.1		
	ERS			
	Clearfield,SCS	.2		
TASK 3--TECHNICAL METHODS AND DATA COLLECTION				
Task 3.1--Conduct an inventory of Federal and state legislation affecting soil and water resources. Summarize these laws and categorize by type of resource conserved. (List the resource areas.) Create a data base of the number and type of partnerships created by legislation. Include attributes and limitations of the laws. Develop a set of "ideal" provisions and compare Federal and state regulations analyzed. A study of NACD Program Authorities, now under contract, will be complete August 31, 1991. This study will summarize the pertinent provisions of Federal and state legislation which relates to conservation programs, categorized by resource.	**Terpstra,SCS**	12.0	6/92	7/93
	NACD	4.0		
	NASDA	.1		
	NACO	.1		
	ES	.1		
	ASCS	.1		
	SPA,SCS	2.0		
	EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.2--Identify the strengths and weakness (effectiveness) of Federal and state legislation which affects conservation implementation. Ask each state to prepare a case study of legislation which affects conservation partnerships .	**Reinhardt,SCS**	2.0	3/93	6/93
	STCs(50)	12.5		
	NACD	.1		
	NASDA	.1		
	NACO	.1		
	Helms,SCS	1.0		
	Osgood,SCS	1.0		
Task 3.3--Report the effects of farm trends and SCS structure on the leadership, organization, and administration of conservation programs and relate this to the change in partnerships. Describe how farm trends, the age of the owner/operator, and urbanization affect these partnerships over the last 3 decades and how these organizations function in a rural and urban environment. How has farm modernization, such as computers and higher education of farmers, affected the farmer and SCS relationship? How has this affected the Federal and state partnerships? Reports on the structure of agriculture and recent state and Federal research will provide information.	**Terpstra,SCS**	3.0	6/93	10/93
	Clearfield,SCS	.5		
	ERS	.5		
	FCA	.1		
	Banks	.1		
	Helms,SCS	.2		
	Assist Ch.	.1		
	Adm,SCS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.4--Consider how information and agricultural technology are changing the task of each agency in implementing conservation legislation in the partnership. Assemble an interdisciplinary team of sociologists, program implementors, physical scientists, economic analysts, etc. to assess this impact. Report the effects of agriculture technology changes on conservation partnerships.	**Reinhardt,SCS** Contractor Clearfield,SCS Kemper,ARS ERS ES SPA,SCS	2.0 12.0 .5 .1 .1 .1 .2	11/92	3/93
Task 3.5--Describe how (1) changes in farm lobby groups, (2) emergence of coalitions, (3) public conservation actions, and (4) other agency clientele affect the Federal and state partnerships. Identify the private organizations and coalitions involved. Assemble a team of representatives from each group and prepare a report on how these organizations have influenced natural resource policy. Examine how these groups will shape future conservation programs and Federal, state and local partnerships. Distinguish different approaches used in rural and nonrural environments. Include the roles of treaty tribes, environmental organizations and other groups.	**Terpstra,SCS** Helms,SCS Clearfield,SCS ERS ES ASCS EPA Env. Org. Farm Org.	4.0 .2 .2 .1 .1 .1 .1	2/93	11/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 3.6--Describe how current regulations for Federal commodity, conservation, and environmental programs have changed these partnerships and their makeup. Consider the role of the Environmental Protection Agency and the effects of legislation such as the Food Security Act of 1985--conservation compliance and wetland conservation provisions, the Clean Water Act, and others. Use the results of **Tasks 3.1 through 3.5** to prepare the report. The multidisciplinary team organized in **Task 3.4** will provide primary assistance in preparing this report.	**Reinhardt,SCS** Helms,SCS Clearfield,SCS NACD Adm,SCS Team	2.0 .2 .2 .1 .5	3/93	7/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Analyze the accomplishments and effectiveness of the partnerships formed to take on the Federal and state conservation effort defined by legislation. Evaluate the effectiveness of the state-funded conservation programs, and of Federal support of state priorities, such as NCP priorities to reduce excessive erosion and protect water from non-point pollution. Determine which partnerships address conservation issues. Identify Federal and state programs like the Wisconsin and Ohio incentive programs that effectively implement conservation. Sources of information include: SCS progress reports, RCA appraisal studies, NACD Federal and state financial incentives, state and soil conservation district employees, CPD appropriated funds report, water quality reports, 319 plans, RC&D plans, and PL-566 plans.	**Reinhardt,SCS** Helms,SCS Clearfield,SCS Massey NACD NASDA NACO ES ASCS	3.0 1.0 .5 1.0 .1 .5 .1 .1 .1	7/93	12/93

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 4.2--Analyze the changing roles of partnerships as the result of current legislation changes. Determine the effect on leadership, support, administration, funding, and technical expertise. Assess which resource objectives are attainable in terms of funds and programs. Identify how Federal, state and local governments can best accomplish these objectives.	**Terpstra,SCS**	2.0	10/93	2/94
	Contractor	4.0		
	ERS			
	NACD	.1		
	ES	.1		
	ASCS	.1		
	EPA	.1		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5-- FUTURE POLICY ANALYSIS				
Task 5.1--What changes do the present partnership roles and organization need to achieve goals to protect and improve soil, water, air, plant, and animal resources? How should the SCS structure change as a result of legislation, funding, farm technology and rural/urban changes? What programs and policies are needed to strengthen this partnership? Use the team assembled above to help prepare this report.	**Reinhardt,SCS** Terpstra,SCS Helms,SCS Clearfield,SCS ERS EPA NACD NASDA	2.0 2.0 1.0 1.0 .1 .1 .1 .1	8/93	1/94
Task 5.2--Prepare an executive summary report, covering the major findings from each task.	**Reinhardt,SCS**	1.0	1/94	2/94

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DRAFT--WHAT IS THE ROLE OF LIMITED RESOURCE AND MINORITY FARMERS IN CONSERVATION?--DRAFT

Resource Topic Leader: Maxine Barron
(doc rcaLRF, 22 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--LIMITED RESOURCE AND MINORITY FARMERS (LRF)--WHY? WHAT? HOW? WHEN?				
Task 1.1--Define "limited resource and minority farmers" for the U.S. Department of Agriculture, TA, FA, EA programs.	**Barron,SCS**	.5		
	Terpstra,SCS	.2		
	Ruffin,SCS	.2		
	Tatum,SCS	.2		
	Jenkins,OAE	.5		
	Froe,OAE	.5		
	Kennedy,ASCS	.2		
	Campbell,FmHA	.2		
	Dye,ES	.2		
	Kerr,CSRS	.2		
	Clearfield,SCS	.2		
Task 1.2--Formulate and issue a USDA policy on the type of program and nonprogram initiatives established to work with LRFs on resource conservation.	**Barron,SCS**	.4		
	Jenkins/Froe, OAE	1.0		
	FS	.2		
	ASCS	.2		
	FmHA	.2		
	ES	.2		
	CSRS	.2		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 2--CURRENT STATUS AND CONDITIONS				
Task 2.1--Determine the scope of the LRF population. Gather data from existing sources (NRI,Census,ASCS,etc) on the demographics of LRFs in terms of race, income, age, sex, location, farm size, enterprise, ownership, and location.	**Barron,SCS**	2.0		
	Berc/Smith,SCS	2.0		
	Census	.5		
	ASCS	.5		
	Terpstra,SCS	1.0		
Task 2.2--Measure the impact of the 1985 Food Security Act (FSA) and the 1990 Food, Agriculture, Conservation and Trade (FACT) Act on LRFs through special studies, surveys and existing data collection efforts. Assess the status of LRFs with respect to conservation plans, USDA technical or financial assistance, cost-share participation, etc. Examine the conservation compliance provision of the FSA and assess LRFs' ability to develop and implement conservation plans within the prescribed time period.	**Barron,SCS**	2.0		
	Terpstra/ Ruffin,SCS	1.0		
	Kennedy,ASCS	1.0		
	Campbell,FmHA	1.0		
	Kerr,CSRS	1.0		
	Land Grant Univ	4.0		
	Tatum,SCS	1.0		
	Stevenson,SCS	1.0		

Task Description	Responsibility (person/agency)	Staff months	Start	End
Task 2.3--Determine the types and amount of technical and financial assistance offered to LRFs. Measure the level of participation in USDA programs by LRFs. Describe the conditions that exist, present policies, and methods of operation that may limit opportunities for access to programs by selected groups. Examine existing information systems to determine the capacity for meeting this need. Develop additional information systems.	**Barron,SCS**	2.0		
	Terpstra,SCS	1.0		
	ASCS	2.0		
	FmHA	2.0		
	CSRS	2.0		
	ERS	2.0		
Task 2.4--Assess the impact LRFs' management practices have on water quality and quantity and soil erosion rates with the use of process models. Compare the management practices of LRFs vs non-LRFs to determine if the differences contribute more or less to soil and water degradation. Using farm level conservation, commodity and environmental integrated analysis, evaluate how the differences in farm management and conservation practices affect the environment.	**Barron,SCS**	.5		
	Tatum,SCS	.5		
	Alt,SCS	1.0		
	Clearfield,SCS	.5		
	Land Grant Univ	4.0		
	Froe,OAE	.5		
	Stevenson,SCS	.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 3--TECHNICAL METHODS AND DATA COLLECTIONS				
Task 3.1--Utilize NRI data gathering and Ag Census processing techniques to collect demographics on the LRF clientele.	**Berc,SCS**	.5		
	Alt,SCS	.5		
	Post,SCS	.5		
Task 3.2--Establish a natural resources database for LRFs, and identify the socio-economic characteristics of this clientele. (Use information compiled under **Task 2.1**; review, and expand or supplement from other sources as fresh data become available.)	**Berc,SCS**	1.0		
	Clearfield,SCS	.5		
	ERS	1.0		
TASK 4--ALTERNATIVE SOLUTIONS				
Task 4.1--Propose innovative changes in the types and level of programs administered to meet the needs of LRFs (e.g., variable cost-share rates, alternative management practices, creative financing, marketing strategies, etc.). Convene a multidisciplinary interagency team to develop types of changes and programs to consider.	**Barron,SCS**	.5		
	Tatum,SCS	.2		
	Stevenson,SCS	.2		
	Terpstra,SCS	.2		
	Ruffin,SCS	.2		
	ASCS	.2		
	FmHA	.2		
	ERS	.2		
	Froe,OAE	.5		

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 5--FUTURE POLICY ANALYSIS				
Task 5.1--Use the information of **Tasks 1 thru 4** to formulate the types of conservation programs needed to protect and enhance the resources and the environment in areas where there are significant numbers of limited resource producers. Estimate the effect of these proposed programs on achieving environmental and conservation objectives.	**Barron,SCS**	.5		
	Tatum,SCS	1.0		
	Terpstra,SCS	1.0		
	Ruffin,SCS	.5		
	Stevenson,SCS	.5		
	ASCS	1.0		
	FmHA	1.0		
	ERS	.5		
	Land Grant Univ	2.0		

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DRAFT--WHAT IS THE EFFECT OF THE CHANGING WORK FORCE ON IMPLEMENTING NATURAL RESOURCE CONSERVATION--DRAFT

Resource Topic Leader: Maxine Barron
(doc rcaWFC3, 25 JUN 92)

Task Description	Responsibility (person/agency)	Staff months	Start	End
TASK 1--WORK FORCE COMPOSITION-WHAT? WHY? HOW? WHEN?				
Task 1.1--Define what skills are needed to maintain natural resource viability and achieve a diverse work force proficient in research, policy formulation, technical assistance, and technology development and transfer. Take note of new technological fields and specialties currently being developed.	**Barron,SCS** Slagle,OP Jenkins,OAE ASCS FmHA FS ES CSRS ERS			
Task 1.2--Identify clientele and levels of skills necessary for services provided by Federal, state and local governments.	**Barron,SCS** Slagle,OP Land Grant Univ			
TASK 2--CURRENT STATUS AND TRENDS				
Task 2.1--Establish baseline data for the skills and cultural background of the current work forces of Federal, state and local governments.	**Barron,SCS** Williams,SCS Slagle,OP			
Task 2.2--Develop work force trends. Analyze the data to determine changes in the work force and reasons for their occurrence.	Slagle,OP ERS Census			

Task Description	Responsibility (person/agency)	Staff months	Start	End

Task 2.3--Investigate trends in new hires by Federal, state, and local governments. Determine if there have been significant changes in numbers, grade level, and discipline. Determine why.

Task 2.4--Show the past trends in composition of college graduates. Analyze the changes and dynamics for the changes. Use existing data and studies for this analysis.

Task 2.5----Show the trends in types of clientele served in implementing conservation. Report how this clientele composition has changed since the framing and implementation of the 1985 FSA and 1990 FACT.

Task 3--TECHNICAL METHODS AND DATA COLLECTION

Task 3.1--Determine the type of job classification and position descriptions needed to implement current conservation and environmental policies on the Federal, state and local levels. Estimate what the future needs may be for policies under consideration.

Task 3.2--Determine the needs of clientele being served to implement agricultural conservation and environmental policies. Identify the future need of potential clientele for policies under consideration.

Task 3.3--Analyze changes needed in Federal, state and local agencies' job classification and position descriptions to meet conservation program and environmental needs in the next two decades.

Task Description	Responsibility (person/agency)	Staff months	Start	End

Task 3.4--Estimate the work force skill composition of college graduates for the next two decades. Identify the agricultural cultural background of these graduates.

Task 3.5--Compare the skill composition and cultural background of current and future agricultural college graduates to the baseline of **Task 2.1** and current and future needs of conservation and environmental clientele.

Task 4--ALTERNATIVE SOLUTIONS

Task 4.1--Determine how the current work force skill composition does not meet current and future conservation and environmental clientele needs. Identify alternative personnel management action necessary to assist in making changes to meet future conservation needs at Federal, state and local levels.

Task 4.2--Identify alternative employment and training actions required to match college graduate skills and background with future conservation and environmental needs.

Task 4.3--Combine the analysis of **Tasks 4.1** and **4.2** to identify alternative training programs to match work force skills with current and future conservation needs at Federal, state and local levels.

Task Description	Responsibility (person/agency)	Staff months	Start	End

Task 4.4--Using the combined analysis of **Task 4.1** and **4.2**, identify alternative programs to communicate conservation and environmental work force skill needs and emphasis to institutions of higher learning.

TASK 5--FUTURE POLICY ANALYSIS

Task 5.1--Formulate policies based upon **Task 4** analysis to promote the development of a skilled labor force to meet conservation and environmental needs at the Federal, state and local levels.

APPENDIX IV

Third RCA Appraisal Models:
Brief Descriptions

Several of the biological, physical and economic models being considered for use in the Third RCA Appraisal Analysis are briefly described below. Detailed information on their capabilities, limitations, and operation can be obtained from the model developers and designers. A list of the researchers involved in developing, testing, evaluating, and applying these models is available from the Strategic Planning and Policy Analysis Staff in Washington, D.C.

Physical and Biological Models

EPIC - Erosion Productivity Impact Calculator (EPIC) was developed by Agricultural Research Service (ARS) in cooperation with SCS and the Economic Research Service (ERS) for use in assessing the effect of erosion on productivity. The major components are weather, hydrology, erosion (water and wind), nutrients (N and P), plant growth, soil temperature, tillage, economics, pesticide fate, and plant environment control. Recently, EPIC has been made more general for use in solving a variety of agricultural management problems including drainage, irrigation, water yield, erosion control, fertilizer and lime application, pest control, tillage, and crop residue management. The model simulates the transport of pesticides and of mineral and organic N and P on the surface with runoff and sediment, laterally for subsurface flow, and through the root zone by percolation. EPIC contains mechanisms linking carbon dioxide to the conversion of energy to biomass and to plant stomatal resistance. It also has a flexible crop rotation schedule that allows the model to automatically simulate growing season changes that may occur as carbon dioxide levels change.

ROTO - ROTO is a streamflow routing model that is intended to simulate the streamflows in large river basins. It is designed to combine outflows from other models or data from upstream gaging stations and route the combined flows through long stream reaches, lakes, and reservoirs.

SWRRBWQ - Simulator for Water Resources in Rural Basin Water Quality (SWRRBWQ) was developed by ARS for simulating hydrologic and related processes in rural basins. The objective of the model is to predict the effect of management decisions on water, sediment, nutrient, and pesticide yields at the subbasin or basin outlet. SWRRBWQ is a comprehensive, continuous-simulation model covering aspects of the hydrologic cycle, pone and reservoir storage, sedimentation, crop growth, nutrient yield, and pesticide fate.

A basin can be divided into a maximum of 10 subbasins to take into account differences in soils, land use, crops, topography, vegetation, or weather. SWRRBWQ allows for simultaneous computation on each subbasin and routes the water, sediment, and chemicals from the subbasin outlets to the basin outlet. It also has a lake water quality

component that tracks the fate of pesticides and phosphorus from their initial application on the land to their final deposition in a lake.

GLEAMS - Ground Leaching of Agricultural Management Systems (GLEAMS) is a continuous-simulation, field scale model, which was developed by ARS as an extension of the Chemicals, Runoff and Erosion from Agriculture Management Systems (CREAMS) model. GLEAMS assumes that a field has homogeneous land use, soils, and precipitation. It consists of three major components: hydrology, erosion/sediment yield, and pesticide transport. GLEAMS was developed to evaluate the impact of management practices on potential pesticide leaching within, through, and below the root zone. It also estimates surface runoff and sediment losses from the field. GLEAMS was developed as a tool for comparative analysis of complex pesticide chemistry, soil properties, and climate. GLEAMS can be used to assess the effect of farm level management decisions on water quality.

The following example application of GLEAMS illustrates another way to use process models. GLEAMS simulations were set up for 20 locations in the U.S. for ten major crops with 15 years of site-specific weather data. These data sets were then used to examine the transport and fate of alternative chemicals that a pesticide developer was considering to screen them by weather, soil type, and crop prior to application for registration.

AGNPS - Agricultural Non-Point Source pollution model (AGNPS) is a single-event-based model. It was originally developed by ARS to simulate sediment and nutrient transport from agricultural watersheds in Minnesota. The basic components of the model are hydrology, erosion, sediment transport, nutrient transport, and chemical oxygen demand. The model works on a cell basis with uniform, square areas that collectively represent the watershed. Contaminants are routed from the headwaters of the watershed to the outlet in a stepwise fashion so that flow through any cell can be examined.

AGNPS was used to examine a 12,805 hectare watershed in southeastern Minnesota Topography is hilly and rolling with one-third of the land forested and two-thirds in agriculture. The watershed contained numerous feedlots was used to simulate the movement of sediment and nutrients from feedlots due to a 25-year, 24-hour storm event. The output was used to determine the critical areas at which control measures could be used to reduce potential pollutants in a trout stream.

National and Regional Economic Resource Allocation Models

AG+GEM - The AG+GEM is an econometric macro-sector model that simulates the interface between agriculture and the general economy (Penson and Taylor, 1990). In AG+GEM, the agriculture sector is modeled with 10 production regions while the macro sectors and policies of the economy are modeled ar the national level. AG+GEM enables, for example, the direct evaluation of the impact of changing Federal Reserve policy on agriculture via price and interest rate linkages. The macro-economy impacts of environmental restrictions that shift the agriculture commodity supply curve can also be estimated.

AGSIM - The AGSIM model is the 10 regional agricultural supply component of the AG+GEM along with commodity demand functions and a full specification of government policy (Taylor, 1990). AGSIM enables quick evaluation of alternatives not expected to have much impact on or be impacted much by the macro economy. Examples include estimation of the regional impacts of expansion of the Conservation Reserve Program, introduction of new dairy technology, and changing the level of target prices for selected commodities.

ASM - The Agricultural Sector Model (ASM) evaluates the U.S. agricultural sector level impacts of agricultural, technology, air quality and resource constraint policies through the simulation of a competitive economy. ASM includes 64 production regions for 30 primary products and also includes at the national level the processing activities for 32 secondary commodities. Commodity demand and resource supply functions can be calibrated so that model solution market equilibrium reflects the trade and price outcomes from the AG+GEM model or from other sets of assumptions. For the Soil Conservation Service, ASM predictions for regional impacts on production, resource use, and income are particularly important. ASM has recently been applied to study the impacts of global warming on regional cropping patterns and the impacts of planting trees on agricultural land to offset global warming.

HUMUS - HUMUS is an acronym for "hydrologic modeling of the United States." In this sense, HUMUS Project is intended to be a tool to obtain a more accurate assessment of national trends in the quantity of water supply and use than has been achieved in previous national water resources assessments. With this project, the Soil Conservation Service is making its first attempt to simulate the hydrologic cycle through all of the nonfederal watersheds in the United States. The simulation will be based on geographic data files as well as historic data on land uses, crop production, weather, streamflows, nutrient management, salt movement, sediment movement, and irrigation water uses.

The HUMUS Project is more than just a hydrologic simulation project. SWRRBWQ and ROTO will be linked to the economic models to analyze the effect of nutrients on water quality for the RCA Appraisal. Also, the HUMUS Project will help to analyze such issues as the impacts of water transfers on the national economy, the impacts of commodity programs on agricultural water uses, the opportunities for providing incentives to restore water to the environment, and other major water resources issues.

Input/Output Sector Models

I-O M - The I-O M model is a set of multiplier coefficients enabling the detailed estimation of the impact of agricultural and macro-sector changes on rural and disaggregate sectors of the economy.

Farm Level Economic Resource Allocation Models

REPFARM - REPFARM is an optimization model and simulates the optimal choice for a particular farm, given the farm's goals, resource constraints, available technologies, government policies, etc. A common use of REPFARM is to explore the labor and machine capacities of the farm for alternative tillage and input management strategies, given the limited windows available for field time. Model coefficients for alternative technologies representing sustainable or conservation-oriented agricultural practices can be estimated with the EPIC model and then evaluated with REPFARM. REPFARM has been widely used in farmer training sessions by both universities and private companies.

FLIPSIM - FLIPSIM is a stochastic simulation tool for predicting the economic viability of a particular farm, given that farm's production choices and expected prices. Typically, a stochastic simulation involves a set of 100 different annual weather patterns along with the probability of their outcome and the expected covariance with commodity yields and prices. FLIPSIM has been in use for 10 years, and more than 50 representative farms have been established across the United States. The FLIPSIM representative farms consist of local panels of farmers and related individuals who define the local "representative farm" and a prediction of how that farm will respond to changing conditions. Alternatively, the optimal production mix can be obtained from REPFARM and the probability distribution of yields from EPIC.

Data Base System

The Soil Conservation Service environmental and economic modeling system is supported by a computerized Data Base Management System (DBMS). This DBMS uses SQL software to enable the online availability of the 1987 National Resources Inventory, the Soils 5 soil characteristic data set, the Census of Agriculture, the NASS County Level yield, acreage, and production data, and numerous other data.

CARE - The Cost and Returns Estimator (CARE) can be used on a per-acre, single budget basis to evaluate the costs and returns associated with alternative conservation technologies. CARE utilizes engineering coefficients on machine and labor efficiency and a specification of timing of operation and input application, and then calculates the annual per acre costs. With CARE, the user can assume average annual total machine usages as per acre calculations are made, or apply it in the whole form mode, thus requiring an actual balancing of machine hours, etc., across crops and fields.

PLEASE SUBMIT BRIEF STATEMENTS ABOUT THE MODELS YOU ARE CONSIDERING FOR THE RCA ANALYSIS.

List of Acronyms

This list contains the acronyms used for agencies, organizations, universities, etc. (where specified) in Table 2 and Appendix III. Departmental affiliation is given where appropriate, and agency divisions and offices of the Soil Conservation Service are so designated.

		U.S. Govt. Department
AF&GC	American Forage and Grass Council	
AFC	American Forest Council	
ARS	Agricultural Research Service	Agric.
ASCS	Agricultural Stabilization and Conservation Service	"
BEA	Bureau of Economic Analysis	Commerce
BLM	Bureau of Land Management	Interior
BOC	Bureau of the Census	Commerce
BOR	Bureau of Reclamation	Interior
CES = ES	Cooperative Extension Service	Agric.
COE	U.S. Army Corps of Engineers	Army
CPA (SCS)	Conservation Planning and Application Division	Agric.
CSRS	Cooperative State Research Service	Agric.
DOE	Department of Energy	
DOI	Department of the Interior	
DOT	Department of Transportation	
ECO (SCS)	Economics and Social Sciences Division	Agric.
EPA	Environmental Protection Agency	
ERS	Economic Research Service	Agric.
ES	Extension Service	"
FCA	Farm Credit Administration	
FEMA	Federal Emergency Management Agency	
FERC	Federal Energy Regulatory Commission	
FmHA	Farmers Home Administration	Agric.
FS	Forest Service	"
FWLS = FWS	Fish and Wildlife Service	Interior
GIS (SCS)	Cartography and Geographic Information System Division	Agric.
IAA	Institute for Alternative Agriculture	
ISC	Interagency Sediment Committee	Agric.
ISU	Iowa State University	
LTD (SCS)	Land Treatment Program Division	Agric.
MWNTC, MNTC (SCS)	Midwest National Technical Center	Agric.

NACD	National Association of Conservation Districts	
NACO	National Association of Counties	
NASDA	National Association of State Departments of Agriculture	
NASS	National Agricultural Statistics Service	Agric.
Nat'l Trust	National Trust for Historic Preservation	
NCS	North Carolina State University	
NCSHPO	National Conference of State Historic Preservation Officers	
NOAA	National Oceanic and Atmospheric Administration	Commerce
NPS	National Park Service	Interior
NTCs (SCS)	National Technical Centers (see also MWNTC, WNTC)	Agric.
NWLF	National Wildlife Federation	
NWOA	National Woodland Owners Association	
NWQTDS	National Water Quality Technology Demonstration Sites	Agric.
OAE	Office of Advocacy and Enterprise	Agric.
OBPA	Office of Budget and Program Analysis	"
OE	Office of Energy	"
OP	Office of Personnel	"
RDA	Rural Development Administration	Agric.
REA	Rural Electrification Administration	"
RID (SCS)	Resources Inventory Division	"
SC (SCS)	State Conservationists (also STCs)	Agric.
SCS	Soil Conservation Service	"
SFI	Sport Fishing Institute	
SO (SCS)	State offices	Agric.
SPA (SCS)	Strategic Planning and Policy Analysis	"
SRM	Society for Range Management	
STCs (SCS)	State Conservationists	Agric.
TAES	Texas Agricultural Experiment Station	
TAMUS	Texas A & M University System	
UOM	University of Maryland	
USGS	U.S. Geological Survey	Interior
VPI	Virginia Polytechnic Institute and State University	
WNTC (SCS)	West National Technical Center	Agric.
WSU	Washington State University	

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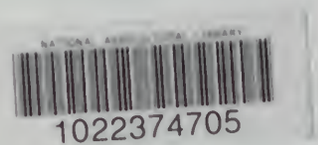
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